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40 CFR Part 80

Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 80

[EPA–HQ–OAR–2005–0161; FRL–9112–3]

RIN 2060–A081

Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Under the Clean Air Act Section 211(o), as amended by the Energy Independence and Security Act of 2007 (EISA), the Environmental Protection Agency is required to promulgate regulations implementing changes to the Renewable Fuel Standard program. The revised statutory requirements specify the volumes of cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel that must be used in transportation fuel. This action finalizes the regulations that implement the requirements of EISA, including the cellulosic, biomass-based diesel, advanced biofuel, and renewable fuel standards that will apply to all gasoline and diesel produced or imported in 2010. The final regulations make a number of changes to the current Renewable Fuel Standard program while retaining many elements of the compliance and trading system already in place. This final rule also implements the revised statutory definitions and criteria, most notably the new greenhouse gas emission thresholds for renewable fuels and new limits on renewable biomass feedstocks. This rulemaking marks the first time that greenhouse gas emission performance is being applied in a regulatory context for a nationwide program. As mandated by the statute, our greenhouse gas emission assessments consider the full lifecycle emission impacts of fuel production from both direct and indirect emissions, including significant emissions from land use changes. In carrying out our lifecycle analysis we have taken steps to ensure that the lifecycle estimates are based on the latest and most up-to-date science. The lifecycle greenhouse gas assessments reflected in this rulemaking represent significant improvements in analysis based on information and data received since the proposal. However, we also recognize that lifecycle GHG assessment of biofuels is an evolving discipline and will continue to revisit our lifecycle analyses in the future as new information becomes available. EPA plans to ask the National Academy of Sciences for assistance as we move forward. Based on current analyses we have determined that ethanol from corn starch will be able to comply with the required greenhouse gas (GHG) threshold for renewable fuel. Similarly, biodiesel can be produced to comply with the 50% threshold for biomass-based diesel, sugarcane with the 50% threshold for advanced biofuel and multiple cellulosic-based fuels with their 60% threshold. Additional fuel pathways have also been determined to comply with their thresholds. The assessment for this rulemaking also indicates the increased use of renewable fuels will have important environmental, energy and economic impacts for our Nation.

DATES: This final rule is effective on July 1, 2010, and the percentage standards apply to all gasoline and diesel produced or imported in 2010. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of July 1, 2010.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–HQ–OAR–2005–0161. All documents in the docket are listed in the *http://www.regulations.gov* Web site. Although listed in the index, some information is not publicly available, *e.g.,* confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through *http://www.regulations.gov* or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Air Docket is (202) 566–1742.

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SUPPLEMENTARY INFORMATION:

General Information

I. Does This Final Rule Apply to Me?

Entities potentially affected by this final rule are those involved with the production, distribution, and sale of transportation fuels, including gasoline and diesel fuel or renewable fuels such as ethanol and biodiesel. Regulated categories include:

Category	NAICS [1] codes	SIC [2] codes	Examples of potentially regulated entities
Industry	324110	2911	Petroleum Refineries.
Industry	325193	2869	Ethyl alcohol manufacturing.
Industry	325199	2869	Other basic organic chemical manufacturing.
Industry	424690	5169	Chemical and allied products merchant wholesalers.
Industry	424710	5171	Petroleum bulk stations and terminals.
Industry	424720	5172	Petroleum and petroleum products merchant wholesalers.
Industry	454319	5989	Other fuel dealers

[1] North American Industry Classification System (NAICS)
[2] Standard Industrial Classification (SIC) system code.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this final action. This table lists the types of entities that EPA is now aware could potentially be regulated by this final action. Other types of entities not listed in the table could also be regulated. To determine whether your activities would be regulated by this final action, you should carefully examine the applicability criteria in 40 CFR part 80. If you have any questions regarding the applicability of this final action to a

particular entity, consult the person listed in the preceding section.

Outline of This Preamble

I. Executive Summary

Through this final rule, the U.S. Environmental Protection Agency is revising the National Renewable Fuel Standard program to implement the requirements of the Energy Independence and Security Act of 2007 (EISA). EISA made significant changes to both the structure and the magnitude of the renewable fuel program created by the Energy Policy Act of 2005 (EPAct). The EISA fuel program, hereafter referred to as RFS2, mandates the use of 36 billion gallons of renewable fuel by 2022—a nearly five-fold increase over the highest volume specified by EPAct. EISA also established four separate categories of renewable fuels, each with a separate volume mandate and each with a specific lifecycle greenhouse gas emission threshold. The categories are renewable fuel, advanced biofuel, biomass-based diesel, and cellulosic biofuel. There is a notable increase in the mandate for cellulosic biofuels in particular. EISA increased the cellulosic biofuel mandate to 16 billion gallons by 2022, representing the bulk of the increase in the renewable fuels mandate.

EPA's proposed rule sought comment on a multitude of issues, ranging from how to interpret the new definitions for renewable biomass to the Agency's proposed methodology for conducting the greenhouse gas lifecycle assessments required by EISA. The decisions presented in this final rule are heavily informed by the many public comments we received on the proposed rule. In addition, and as with the proposal, we sought input from a wide variety of stakeholders. The Agency has had multiple meetings and discussions with renewable fuel producers, technology companies, petroleum refiners and importers, agricultural associations, lifecycle experts, environmental groups, vehicle manufacturers, states, gasoline and petroleum marketers, pipeline owners and fuel terminal operators. We also have worked closely with other Federal agencies and in particular with the Departments of Energy and Agriculture.

This section provides an executive summary of the final RFS2 program requirements that EPA is implementing as a result of EISA. The RFS2 program will replace the RFS1 program promulgated on May 1, 2007 (72 FR 23900).[1] Details of the final requirements can be found in Sections II and III, with certain lifecycle aspects detailed in Section V.

This section also provides a summary of EPA's assessment of the environmental and economic impacts of the use of higher renewable fuel volumes. Details of these analyses can be found in Sections IV through IX and in the Regulatory Impact Analysis (RIA).

[1] To meet the requirements of EPAct, EPA had previously adopted a limited program that applied only to calendar year 2006. The RFS1 program refers to the general program adopted in the May 2007 rulemaking.

A. Summary of New Provisions of the RFS Program

Today's notice establishes new regulatory requirements for the RFS program that will be implemented through a new subpart M to 40 CFR part 80. EPA is maintaining several elements of the RFS1 program such as regulations governing the generation, transfer, and use of Renewable Identification Numbers (RINs). At the same time, we are making a number of updates to reflect the changes brought about by EISA

1. Required Volumes of Renewable Fuel

The RFS program is intended to require a minimum volume of renewable fuel to be used each year in the transportation sector. In response to EPAct 2005, under RFS1 the required volume was 4.0 billion gallons in 2006, ramping up to 7.5 billion gallons by 2012. Starting in 2013, the program also required that the total volume of renewable fuel contain at least 250 million gallons of fuel derived from cellulosic biomass.

In response to EISA, today's action makes four primary changes to the volume requirements of the RFS program. First, it substantially increases the required volumes and extends the timeframe over which the volumes ramp up through at least 2022. Second, it divides the total renewable fuel requirement into four separate categories, each with its own volume requirement. Third, it requires, with certain exceptions applicable to existing facilities, that each of these mandated volumes of renewable fuels achieve certain minimum thresholds of GHG emission performance. Fourth, it requires that all renewable fuel be made from feedstocks that meet the new definition of renewable biomass including certain land use restrictions. The volume requirements in EISA are shown in Table I.A.1–1.

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Table I.A.1-1

Renewable Fuel Volume Requirements for RFS2 (billion gallons)

	Cellulosic biofuel requirement	Biomass-based diesel requirement	Advanced biofuel requirement	Total renewable fuel requirement
2009	n/a	0.5	0.6	11.1
2010	0.1	0.65	0.95	12.95
2011	0.25	0.80	1.35	13.95
2012	0.5	1.0	2.0	15.2
2013	1.0	a	2.75	16.55
2014	1.75	a	3.75	18.15
2015	3.0	a	5.5	20.5
2016	4.25	a	7.25	22.25
2017	5.5	a	9.0	24.0
2018	7.0	a	11.0	26.0
2019	8.5	a	13.0	28.0
2020	10.5	a	15.0	30.0
2021	13.5	a	18.0	33.0
2022	16.0	a	21.0	36.0
2023+	b	b	B	b

[a] To be determined by EPA through a future rulemaking, but no less than 1.0 billion gallons.

[b] To be determined by EPA through a future rulemaking.

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As shown in the table, the volume requirements are not exclusive, and generally result in nested requirements. Any renewable fuel that meets the requirement for cellulosic biofuel or biomass-based diesel is also valid for meeting the advanced biofuel requirement. Likewise, any renewable fuel that meets the requirement for advanced biofuel is also valid for meeting the total renewable fuel requirement. *See* Section V.C for further discussion of which specific types of fuel may qualify for the four categories shown in Table I.A.1–1.

2. Standards for 2010 and Effective Date for New Requirements

While EISA established the renewable fuel volumes shown in Table I.A.1–1, it also requires that the Administrator set the standards based on these volumes each November for the following year based in part on information provided from the Energy Information Agency (EIA). In the case of the cellulosic biofuel standard, section 211(o)(7)(D) of EISA specifically requires that the standard be set based on the volume projected to be available during the following year. If the volume is lower than the level shown in Table I.A.1–1, then EISA allows the Administrator to also lower the advanced biofuel and total renewable fuel standards each year accordingly. Given the implications of these standards and the necessary judgment that can't be reduced to a formula akin to the RFS1 regulations, we believe it is appropriate to set the standards through a notice-and-comment rulemaking process. Thus, for future standards, we intend to issue an NPRM by summer and a final rule by November 30 of each year in order to determine the appropriate standards applicable in the following year. However, in the case of the 2010 standards, we are finalizing them as part of today's action.

a. 2010 Standards

While we proposed that the cellulosic biofuel standard would be set at the EISA-specified level of 100 million gallons for 2010, based on analysis of information available at this time, we no longer believe the full volume can be met. Since the proposal, we have had detailed discussions with over 30 companies that are in the business of developing cellulosic biofuels and cellulosic biofuel technology. Based on these discussions, we have found that many of the projects that served as the basis for the proposal have been put on hold, delayed, or scaled back. At the same time, there have been a number of additional projects that have developed and are moving forward. As discussed in Section IV.B.3, the timing for many of the projects indicates that while few will be able to provide commercial volumes for 2010, an increasing number will come on line in 2011, 2012, and 2013. The success of these projects is then expected to accelerate growth of the cellulosic biofuel industry out into the future. EIA provided us with a projection on October 29, 2009 of 5.04 million gallons (6.5 million ethanol-equivalent gallons) of cellulosic biofuel production for 2010. While our company-by-company assessment varies from EIA's, as described in Section IV.B.3., and actual cellulosic production volume during 2010 will be a function of developments over the course of 2010, we nevertheless believe that 5 million gallons (6.5 million ethanol equivalent) represents a reasonable, yet achievable level for the cellulosic standard for 2010. While this is lower than the level specified in EISA, no change to the advanced biofuel and total renewable fuel standards is warranted. With the inclusion of an energy-based Equivalence Value for biodiesel and renewable diesel, 2010 compliance with the biomass-based diesel standard will be more than enough to ensure compliance with the advanced biofuel standard for 2010.

Today's rule also includes special provisions to account for the 2009 biomass-based diesel volume requirements in EISA. As described in the NPRM, in November 2008 we used the new total renewable fuel volume of 11.1 billion gallons from EISA as the basis for the 2009 total renewable fuel standard that we issued under the RFS1 regulations.[2] While this approach ensured that the total mandated renewable fuel volume required by EISA for 2009 was used, the RFS1 regulatory structure did not provide a mechanism for implementing the 0.5 billion gallon requirement for biomass-based diesel nor the 0.6 billion gallon requirement for advanced biofuel. As we proposed, and as is described in more detail in Section II.E.2, we are addressing this issue in today's rule by combining the 2010 biomass-based diesel requirement of 0.65 billion gallons with the 2009 biomass based diesel requirement of 0.5 billion gallons to require that obligated parties meet a combined 2009/2010 requirement of 1.15 billion gallons by the end of the 2010 compliance year. No similar provisions are required in order to fulfill the 2009 advanced biofuel volume mandate.

The resulting 2010 standards are shown in Table I.A.2–1. These standards represent the fraction of a refiner's or importer's gasoline and diesel volume which must be renewable fuel. Additional discussion of the 2010 standards can be found in Section II.E.1.b.

TABLE I.A.2–1—STANDARDS FOR 2010

Cellulosic biofuel	0.004%
Biomass-based diesel	1.10%
Advanced biofuel	0.61%
Renewable fuel	8.25%

b. Effective Date

Under CAA section 211(o) as modified by EISA, EPA is required to revise the RFS1 regulations within one year of enactment, or December 19, 2008. Promulgation by this date would have been consistent with the revised volume requirements shown in Table I.A.1–1 that begin in 2009 for certain categories of renewable fuel. As described in the NPRM, we were not able to promulgate final RFS2 program requirements by December 19, 2008.

Under today's rule, the transition from using the RFS1 regulatory provisions regarding registration, RIN generation, reporting, and recordkeeping to using comparable provisions in this RFS2 rule will occur on July 1, 2010. This is the start of the 1st quarter following completion of the statutorily required 60-day Congressional Review period for such a rulemaking as this. This will provide adequate lead time for all parties to transition to the new regulatory requirements, including additional time to prepare for RFS2 implementation for those entities who may find it helpful, especially those covered by the RFS program for the first time. In addition, making the transition at the end of the quarter will help simplify the recordkeeping and reporting transition to RFS2. To facilitate the volume obligations being based on the full year's gasoline and diesel production, and to enable the smooth transition from the RFS1 to RFS2 regulatory provisions, Renewable Identification Numbers (RINs—which are used in the program for both credit trading and for compliance demonstration) that were generated under the RFS1 regulations will continue to be valid for compliance with the RFS2 obligations. Further discussion of transition issues can be found in Sections II.A and II.G.4, respectively.

According to EISA, the renewable fuel obligations applicable under RFS2 apply on a calendar basis. That is, obligated parties must determine their

[2] 73 FR 70643, November 21, 2008

renewable volume obligations (RVOs) at the end of a calendar year based on the volume of gasoline or diesel fuel they produce during the year, and they must demonstrate compliance with their RVOs in an annual report that is due two months after the end of the calendar year.

For 2010, today's rule will follow this same general approach. The four RFS2 RVOs for each obligated party will be calculated on the basis of all gasoline and diesel produced or imported on and after January 1, 2010, through December 31, 2010. Obligated parties will be required to demonstrate by February 28 of 2011 that they obtained sufficient RINs to satisfy their 2010 RVOs. We believe this is an appropriate approach as it is more consistent with Congress' provisions in EISA for 2010, and there is adequate lead time for the obligated parties to achieve compliance.

The issue for EPA to resolve is how to apply the four volume mandates under EISA for calendar year 2010. These volume mandates are translated into applicable percentages that obligated parties then use to determine their renewable fuel volume obligations based on the gasoline and diesel they produce or import in 2010. There are three basic approaches that EPA has considered, based on comments on the proposal. The first is the approach adopted in this rule—the four RFS2 applicable percentages are determined based on the four volume mandates covered by this rule, and the renewable volume obligation for a refiner or importer will be determined by applying these percentages to the volume of gasoline and diesel fuel they produce during calendar year 2010. Under this approach, there is no separate applicable percentage under RFS1 for 2010, however RINs generated in 2009 and 2010 under RFS1 can be used to meet the four volume obligations for 2010 under the RFS2 regulations. Another option, which was considered and rejected by EPA, is much more complicated—(1) determine an RFS1 applicable percentage based on just the total renewable fuel volume mandate, using the same total volume for renewable fuel as used in the first approach, and require obligated parties to apply that percentage to the gasoline produced from January 1, 2010 until the effective date of the RFS2 regulations, and (2) determine the four RFS2 applicable percentages as discussed above, but require obligated parties to apply them to only the gasoline and diesel in 2010 after the effective date of the RFS2 regulations. Of greater concern than its complexity, the second approach fails to ensure that the total volumes for three of the volume mandates are met for 2010. In effect EPA would be requiring that obligated parties use enough cellulosic biofuel, biomass-based diesel, and advanced biofuel to meet approximately 75% of the total volumes required for these fuels under EISA. While the total volume mandate under EISA for renewable fuel would likely be met, the other three volumes mandates would only be met in part. The final option would involve delaying the RFS2 requirements until January 1, 2011, which would avoid the complexity of the second approach, but would be even less consistent with EISA's requirements.

The approach adopted in this rule is clearly the most consistent with EISA's requirement of four different volume mandates for all of calendar year 2010. In addition, EPA is confident that obligated parties have adequate lead-time to comply with the four volume requirements under the approach adopted in this rule. The volume requirements are achieved by obtaining the appropriate number of RINs from producers of the renewable fuel. The obligated parties do not need lead time for construction or investment purposes, as they are not changing the way they produce gasoline or diesel, do not need to design to install new equipment, or take other actions that require longer lead time. Obtaining the appropriate amount of RINs involves contractual or other arrangements with renewable fuel producers or other holders of RINs. Obligated parties now have experience implementing RFS1, and the actions needed to comply under the RFS2 regulations are a continuation of these kinds of RFS1 activities. In addition, an adequate supply of RINs is expected to be available for compliance by obligated parties. RFS1 RINs have been produced throughout 2009 and continue to be produced since the beginning of 2010. There has been and will be no gap or lag in the production of RINS, as the RFS1 regulations continue in effect and require that renewable fuel producers generate RINs for the renewable fuel they produce. These 2009 and 2010 RFS1 RINs will be available and can be used towards the volume requirements of obligated parties for 2010. These RFS1 RINS combined with the RFS2 RINs that will be generated by renewable fuel producers are expected to provide an adequate supply of RINs to ensure compliance for all of the renewable volume mandates. For further discussion of the expected supply of renewable fuel, *see* section IV.

In addition, obligated parties have received adequate notice of this obligation. The proposed rule called for obligated parties to meet the full volume mandates for all four volume mandates, and to base their volume obligation on the volume of gasoline and diesel produced starting January 1, 2010. While the RFS2 regulations are not effective until after January 1, 2010, the same full year approach is being taken for the 2010 volumes of gasoline and diesel. Obligated parties have been on notice based on EPA's proposal, discussions with many stakeholders during the rulemaking, the issuance of the final rule itself, and publication of this rule in the **Federal Register**. As discussed above, there is adequate time for obligated parties to meet their 2010 volume obligations by the spring of 2011.

This approach does not impose any retroactive requirements. The obligation that is imposed under the RFS2 regulations is forward looking—by the spring of 2011, when compliance is determined, obligated parties must satisfy certain volume obligations. These future requirements are calculated in part based on volumes of gasoline and diesel produced prior to the effective date of the RFS2 regulations, but this does not make the RFS2 requirement retroactive in nature. The RFS2 regulations do not change in any way the legal obligations or requirements that apply prior to the effective date of the RFS2 regulations. Instead, the RFS2 requirements impose new requirements that must be met in the future. There is adequate lead time to comply with these RFS2 requirements, and they achieve a result that is more consistent with Congress' goals in establishing 4 volume mandates for calendar year 2010, and for these reasons EPA is adopting this approach for calendar year 2010.

Parties that intend to generate RINs, own and/or transfer them, or use them for compliance purposes after July 1, 2010 will need to register or re-register under the RFS2 provisions and modify their information technology (IT) systems to accommodate the changes we are finalizing today. As described more fully in Section II, these changes include redefining the D code within the RIN that identifies which standard a fuel qualifies for, adding a process for verifying that feedstocks meet the renewable biomass definition, and calculating compliance with four standards instead of one. EPA's registration system is available now for parties to complete the registration process. Further details on this process can be found elsewhere in today's preamble as well as at *http://www.epa.gov/otaq/regs/fuels/*

fuelsregistration.htm. Parties that produce motor vehicle, nonroad, locomotive, and marine (MVNRLM) diesel fuel but not gasoline will be newly obligated parties and may be establishing IT systems for the RFS program for the first time.

3. Analysis of Lifecycle Greenhouse Gas Emissions and Thresholds for Renewable Fuels

a. Background and Conclusions

A significant aspect of the RFS2 program is the requirement that the lifecycle GHG emissions of a qualifying renewable fuel must be less than the lifecycle GHG emissions of the 2005 baseline average gasoline or diesel fuel that it replaces; four different levels of reductions are required for the four different renewable fuel standards. These lifecycle performance improvement thresholds are listed in Table I.A.3–1. Compliance with each threshold requires a comprehensive evaluation of renewable fuels, as well as the baseline for gasoline and diesel, on the basis of their lifecycle emissions. As mandated by EISA, the greenhouse gas emissions assessments must evaluate the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions form land use changes) related to the full lifecycle, including all stages of fuel and feedstock production, distribution and use by the ultimate consumer.

TABLE I.A.3–1—LIFECYCLE GHG THRESHOLDS SPECIFIED IN EISA

[Percent Reduction from Baseline]

Renewable fuel [a]	20
Advanced biofuel	50
Biomass-based diesel	50
Cellulosic biofuel	60

[a] The 20% criterion generally applies to renewable fuel from new facilities that commenced construction after December 19, 2007.

It is important to recognize that fuel from the existing capacity of current facilities and the capacity of all new facilities that commenced construction prior to December 19, 2007 (and in some cases prior to December 31, 2009) are exempt, or grandfathered, from the 20% lifecycle requirement for the Renewable Fuel category. Therefore, EPA has in the discussion below emphasized its analysis on those plants and fuels that are likely to be used for compliance with the rule and would be subject to the lifecycle thresholds. Based on the analyses and approach described in Section V of this preamble, EPA is determining that ethanol produced from corn starch at a new facility (or expanded capacity from an existing) using natural gas, biomass or biogas for process energy and using advanced efficient technologies that we expect will be most typical of new production facilities will meet the 20% GHG emission reduction threshold compared to the 2005 baseline gasoline. We are also determining that biobutanol from corn starch meets the 20% threshold. Similarly, EPA is making the determination that biodiesel and renewable diesel from soy oil or waste oils, fats and greases will exceed the 50% GHG threshold for biomass-based diesel compared to the 2005 petroleum diesel baseline. In addition, we have now modeled biodiesel and renewable diesel produced from algal oils as complying with the 50% threshold for biomass-based diesel. EPA is also determining that ethanol from sugarcane complies with the applicable 50% GHG reduction threshold for advanced biofuels. The modeled pathways (feedstock and production technology) for cellulosic ethanol and cellulosic diesel would also comply with the 60% GHG reduction threshold applicable to cellulosic biofuels. As discussed later in section V, there are also other fuels and fuel pathways that we are determining will comply with the GHG thresholds.

Under EISA, EPA is allowed to adjust the GHG reduction thresholds downward by up to 10% if necessary based on lifecycle GHG assessment of biofuels likely to be available. Based on the results summarized above, we are not finalizing any adjustments to the lifecycle GHG thresholds for the four renewable fuel standard categories.

EPA recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways are likely to be updated. Therefore, while EPA is using its current lifecycle assessments to inform the regulatory determinations for fuel pathways in this final rule, as required by the statute, the Agency is also committing to further reassess these determinations and lifecycle estimates. As part of this ongoing effort, we will ask for the expert advice of the National Academy of Sciences, as well as other experts, and incorporate their advice and any updated information we receive into a new assessment of the lifecycle GHG emissions performance of the biofuels being evaluated in this final rule. EPA will request that the National Academy of Sciences evaluate the approach taken in this rule, the underlying science of lifecycle assessment, and in particular indirect land use change, and make recommendations for subsequent lifecycle GHG assessments on this subject. At this time we are estimating this review by the National Academy of Sciences may take up to two years. As specified by EISA, if EPA revises the analytical methodology for determining lifecycle greenhouse gas emissions, any such revision will apply to renewable fuel from new facilities that commence construction after the effective date of the revision.

b. Fuel Pathways Considered and Key Model Updates Since the Proposal

EPA is making the GHG threshold determination based on a methodology that includes an analysis of the full lifecycle, including significant emissions related to international land-use change. As described in more detail below and in Section V of this preamble, EPA has used the best available models for this purpose, and has incorporated many modifications to its proposed approach based on comments from the public and peer reviewers and developing science. EPA has also quantified the uncertainty associated with significant components of its analyses, including important factors affecting GHG emissions associated with international land use change. As discussed below, EPA has updated and refined its modeling approach since proposal in several important ways, and EPA is confident that its modeling of GHG emissions associated with international land use is comprehensive and provides a reasonable and scientifically robust basis for making the threshold determinations described above. As discussed below, EPA plans to continue to improve upon its analyses, and will update it in the future as appropriate.

Through technical outreach, the peer review process, and the public comment period, EPA received and reviewed a significant amount of data, studies, and information on our proposed lifecycle analysis approach. We incorporated a number of new, updated, and peer-reviewed data sources in our final rulemaking analysis including better satellite data for tracking land use changes and improved assessments of N2O impacts from agriculture. The new and updated data sources are discussed further in this section, and in more detail in Section V.

We also performed dozens of new modeling runs, uncertainty analyses, and sensitivity analyses which are leading to greater confidence in our results. We have updated our analyses in conjunction with, and based on, advice from experts from government,

academia, industry, and not for profit institutions.

The new studies, data, and analysis performed for the final rulemaking impacted the lifecycle GHG results for biofuels in a number of different ways. In some cases, updates caused the modeled analysis of lifecycle GHG emissions from biofuels to increase, while other updates caused the modeled emissions to be reduced. Overall, the revisions since our proposed rule have led to a reduction in modeled lifecycle GHG emissions as compared to the values in the proposal. The following highlights the most significant revisions. Section V details all of the changes made and their relative impacts on the results.

Corn Ethanol: The final rule analysis found less overall indirect land use change (less land needed), thereby improving the lifecycle GHG performance of corn ethanol. The main reasons for this decrease are:

- Based on new studies that show the rate of improvement in crop yields as a function of price, crop yields are now modeled to increase in response to higher crop prices. When higher crop yields are used in the models, less land is needed domestically and globally for crops as biofuels expand.
- New research available since the proposal indicates that the corn ethanol production co-product, distillers grains and solubles (DGS), is more efficient as an animal feed (meaning less corn is needed for animal feed) than we had assumed in the proposal. Therefore, in our analyses for the final rule, domestic corn exports are not impacted as much by increased biofuel production as they were in the proposal analysis.
- Improved satellite data allowed us to more finely assess the types of land converted when international land use changes occur, and this more precise assessment led to a lowering of modeled GHG impacts. Based on previous satellite data, the proposal assumed cropland expansion onto grassland would require an amount of pasture to be replaced through deforestation. For the final rulemaking analysis we incorporated improved economic modeling of demand for pasture area and satellite data which indicates that pasture is also likely to expand onto existing grasslands. This reduced the GHG emissions associated with an amount of land use change.

However, we note that not all modeling updates necessarily reduced predicted GHG emissions from land use change. As one example, since the proposal a new version of the GREET model (Version 1.8C) has been released. EPA reviewed the new version and concluded that this was an improvement over the previous GREET release that was used in the proposal analysis (Version 1.8B). Therefore, EPA updated the GHG emission factors for fertilizer production used in our analysis to the values from the new GREET version. This had the result of slightly increasing the GHG emissions associated with fertilizer production and thus slightly increasing the GHG emission impacts of domestic agriculture.

For the final rule, EPA has analyzed a variety of corn ethanol pathways including ethanol made from corn starch using natural gas, coal, and biomass as process energy sources in production facilities utilizing both dry mill and wet mill processes. For corn starch ethanol, we also considered the technology enhancements likely to occur in the future such as the addition of corn oil fractionation or extraction technology, membrane separation technology, combined heat and power and raw starch hydrolysis.

Biobutanol from corn starch: In addition to ethanol from corn starch, for this final rule, we have also analyzed bio-butanol from corn starch. Since the feedstock impacts are the same as for ethanol from corn starch, the assessment for biobutanol reflects the differing impacts due to the production process and energy content of biobutanol compared to that of ethanol.

Soybean Biodiesel: The new information described above for corn ethanol also leads to lower modeled GHG impacts associated with soybean biodiesel. The revised assessment predicts less overall indirect land use change (less land needed) and less impact from the land use changed that does occur (due to updates in types of converted land assumed). In addition, the latest IPCC guidance indicates reduced domestic soybean N2O emissions, and updated USDA and industry data show reductions in biodiesel processing energy use and a higher co-product credit, all of which further reduced the modeled soybean biodiesel lifecycle GHG emissions. This has resulted in a significant improvement in our assessment of the lifecycle performance of soybean biodiesel as compared to the estimate in the proposal.

Biodiesel and Renewable Diesel from Algal Oil and Waste Fats and Greases: In addition to biodiesel from soy oil, biodiesel and renewable diesel from algal oil (should it reach commercial production) and biodiesel from waste oils, fats and greases have been modeled. These feedstock sources have little or no land use impact so the GHG impacts associate with their use in biofuel production are largely the result of energy required to produce the feedstock (in the case of algal oil) and the energy required to turn that feedstock into a biofuel.

Sugarcane Ethanol: Sugarcane ethanol was analyzed considering a range of technologies and assuming alternative pathways for dehydrating the ethanol prior to its use as a biofuel in the U.S. For the final rule, our analysis also shows less overall indirect land use change (less land needed) associated with sugarcane ethanol production. For the proposal, we assumed sugarcane expansion in Brazil would result in cropland expansion into grassland and lost pasture being replaced through deforestation. Based on newly available regional specific data from Brazil, historic trends, and higher resolution satellite data, in the final rule, sugarcane expansion onto grassland is coupled with greater pasture intensification, such that there is less projected impact on forests. Furthermore, new data provided by commenters showed reduced sugarcane ethanol process energy, which also reduced the estimated lifecycle GHG impact of sugarcane ethanol production.

Cellulosic Ethanol: We analyzed cellulosic ethanol production using both biochemical (enzymatic) and thermo-chemical processes with corn stover, switchgrass, and forestry thinnings and waste as feedstocks. For cellulosic diesel, we analyzed production using the Fischer-Tropsch process. For the final rule, we updated the cellulosic ethanol conversion rates based on new data provided by the National Renewable Energy Laboratory (NREL.) As a result of this update, the gallons per ton yields for switchgrass and several other feedstock sources increased in our analysis for the final rule, while the predicted yields from corn residue and several other feedstock sources decreased slightly from the NPRM values. In addition, we also updated our feedstock production yields based on new work conducted by the Pacific Northwest National Laboratory (PNNL). This analysis increased the tons per acre yields for several dedicated energy crops. These updates increased the amount of cellulosic ethanol projected to come from energy crops. While the increase in crop yields and conversion efficiency reduced the GHG emissions associated with cellulosic ethanol, there remains an increased demand for land to grow dedicated energy crops; this land use impact resulted in increased GHG emissions with the net result varying by the type of cellulosic feedstock source.

We note that several of the renewable fuel pathways modeled are still in early stages of development or commercialization and are likely to continue to develop as the industry moves toward commercial production. Therefore, it will be necessary to reanalyze several pathways using updated data and information as the technologies develop. For example, biofuel derived from algae is undergoing wide ranging development. Therefore for now, our algae analyses presume particular processes and energy requirements which will need to be reviewed and updated as this fuel source moves toward commercial production.

For this final rule we have incorporated a statistical analysis of uncertainty about critical variables in our pathway analysis. This uncertainty analysis is explained in detail in Section V and is consistent with the specific recommendations received through our peer review and public comments on the proposal. The uncertainty analysis focused on two aspects of indirect land use change—the types of land converted and the GHG emission associated with different types of land converted. In particular, our uncertainty analysis focused on such specific sources of information as the satellite imaging used to inform our assessment of land use trends and the specific changes in carbon storage expected from a change in land use in each geographic area of the world modeled. We have also performed additional sensitivity analyses including analysis of two yield scenarios for corn and soy beans to assess the impact of changes in yield assumptions.

This uncertainty analysis provides information on both the range of possible outcomes for the parameters analyzed, an estimate of the degree of confidence that the actual result will be within a particular range (in our case, we estimated a 95% confidence interval) and an estimate of the central tendency or midpoint of the GHG performance estimate.

In the proposal, we considered several options for the timeframe over which to measure lifecycle GHG impacts and the possibility of discounting those impacts. Based on peer review recommendations and other comments received, EPA is finalizing its assessments based on an analysis assuming 30 years of continued emission impacts after the program is fully phased in by 2022 and without discounting those impacts.

EPA also notes that it received significant comment on our proposed baseline lifecycle greenhouse gas assessment of gasoline and diesel ("petroleum baseline"). While EPA has made several updates to the petroleum analysis in response to comments (see Section V for further discussion), we are finalizing the approach based on our interpretation of the definition in the Act as requiring that the petroleum baseline represent an average of the gasoline and diesel fuel (whichever is being replaced by the renewable fuel) sold as transportation fuel in 2005.

As discussed in more detail later, the modeling results developed for purposes of the final rule provide a rich and comprehensive base of information for making the threshold determinations. There are numerous modeling runs, reflecting updated inputs to the model, sensitivity analyses, and uncertainty analyses. The results for different scenarios include a range and a best estimate or mid-point. Given the potentially conservative nature of the base crop yield assumption, EPA believes the actual crop yield in 2022 may be above the base yield; however we are not in a position to characterize how much above it might be. To the extent actual yields are higher, the base yield modeling results would underestimate to some degree the actual GHG emissions reductions compared to the baseline.

In making the threshold determinations for this rule, EPA weighed all of the evidence available to it, while placing the greatest weight on the best estimate value for the base yield scenario. In those cases where the best estimate for the base yield scenario exceeds the reduction threshold, EPA judges that there is a good basis to be confident that the threshold will be achieved and is determining that the bio-fuel pathway complies with the applicable threshold. To the extent the midpoint of the scenarios analyzed lies further above a threshold for a particular biofuel pathway, we have increasingly greater confidence that the biofuel exceeds the threshold.

EPA recognizes that certain commenters suggest that there is a very high degree of uncertainty associated in particular with determining international indirect land use changes and their emissions impacts, and because of this EPA should exclude any calculation of international indirect land use changes in its lifecycle analysis. Commenters say EPA should make the threshold determinations based solely on modeling of other sources of lifecycle emissions. In effect, commenters argue that the uncertainty of the modeling associated with international indirect land use change means we should use our modeling results but exclude that part of the results associated with international land use change.

For the reasons discussed above and in more detail in Section V, EPA rejects the view that the modeling relied upon in the final rule, which includes emissions associated with international indirect land use change, is too uncertain to provide a credible and reasonable scientific basis for determining whether the aggregate lifecycle emissions exceed the thresholds. In addition, as discussed elsewhere, the definition of lifecycle emissions includes significant indirect emissions associated with land use change. In deciding whether a bio-fuel pathway meets the threshold, EPA has to consider what it knows about all aspects of the lifecycle emissions, and decide whether there is a valid basis to find that the aggregate lifecycle emissions of the fuel, taking into account significant indirect emissions from land use change meets the threshold. Based on the analyses conducted for this rule, EPA has determined international indirect land use impacts are significant and therefore must be included in threshold compliance assessment.

If the international land use impacts were so uncertain that their impact on lifecycle GHG emissions could not be adequately determined, as claimed by commenters, this does not mean EPA could assume the international land use change emissions are zero, as commenters suggest. High uncertainty would not mean that emissions are small and can be ignored; rather it could mean that we could not tell whether they are large or small. If high uncertainty meant that EPA were not able to determine that indirect emissions from international land use change are small enough that the total lifecycle emissions meet the threshold, then that fuel could not be determined to meet the GHG thresholds of EISA and the fuel would necessarily have to be excluded from the program.

In any case, that is not the situation here as EPA rejects commenters' suggestion and does not agree that the uncertainty over the indirect emissions from land use change is too high to make a reasoned threshold determination. Therefore biofuels with a significant international land use impact are included within this program.

c. Consideration of Fuel Pathways Not Yet Modeled

Not all biofuel pathways have been directly modeled for this rule. For example, while we have modeled cellulosic biofuel produced from corn

stover, we have not modeled the specific GHG impact of cellulosic biofuel produced from other crop residues such as wheat straw or rice straw. Today, in addition to finalizing a threshold compliance determination for those pathways we specifically modeled, in some cases, our technical judgment indicates other pathways are likely to be similar enough to modeled pathways that we are also assured these similar pathways qualify. These pathways include fuels produced from the same feedstock and using the same production process but produced in countries other than those modeled. The agricultural sector modeling used for our lifecycle analysis does not predict any soybean biodiesel or corn ethanol will be imported into the U.S., or any imported sugarcane ethanol from production in countries other than Brazil. However, these rules do not prohibit the use in the U.S. of these fuels produced in countries not modeled if they are also expected to comply with the eligibility requirements including meeting the thresholds for GHG performance. Although the GHG emissions of producing these fuels from feedstock grown or biofuel produced in other countries has not been specifically modeled, we do not anticipate their use would impact our conclusions regarding these feedstock pathways. The emissions of producing these fuels in other countries could be slightly higher or lower than what was modeled depending on a number of factors. Our analyses indicate that crop yields for the crops in other countries where these fuels are also most likely to be produced are similar or lower than U.S. values indicating the same or slightly higher GHG impacts. Agricultural sector inputs for the crops in these other countries are roughly the same or lower than the U.S. pointing toward the same or slightly lower GHG impacts. If crop production were to expand due to biofuels in the countries where the models predict these biofuels might additionally be produced would tend to lower our assessment of international indirect impacts but could increase our assessment of the domestic (*i.e.,* the country of origin) land use impacts. EPA believes, because of these offsetting factors along with the small amounts of fuel potentially coming from other countries, that incorporating fuels produced in other countries will not impact our threshold analysis. Therefore, fuels of the same fuel type, produced from the same feedstock using the same fuel production technology as modeled fuel pathways will be assessed the same GHG performance decisions regardless of country of origin. These pathways also include fuels that might be produced from similar feedstock sources to those already modeled and which are expected to have less or no indirect land use change. In such cases, we believe that in order to compete economically in the renewable fuel marketplace such pathways are likely to be at least as energy efficient as those modeled and thus have comparable lifecycle GHG performance. Based on these considerations, we are extending the lifecycle results for the fuel pathways already modeled to 5 broader categories of feedstocks. This extension of lifecycle modeling results is discussed further in Section V.C.

We have established five categories of biofuel feedstock sources under which modeled feedstock sources and feedstock sources similar to those modeled are grouped and qualify on the basis of our existing modeling. These are:

1. Crop residues such as corn stover, wheat straw, rice straw, citrus residue.
2. Forest material including eligible forest thinnings and solid residue remaining from forest product production.
3. Annual cover crops planted on existing crop land such as winter cover crops.
4. Separated food and yard waste including biogenic waste from food processing.
5. Perennial grasses including switchgrass and miscanthus.

The full set of pathways for which we have been able to make a compliance decision are described in Section V.

Threshold determinations for certain other pathways were not possible at this time because sufficient modeling or data is not yet available. In some of these cases, we recognize that a renewable fuel is already being produced from an alternative feedstock. Although we have the data needed for analysis, we did not have sufficient time to complete the necessary lifecycle GHG impact assessment for this final rule. We will model and evaluate additional pathways after this final rule on the basis of current or likely commercial production in the near-term and the status of current analysis at EPA. EPA anticipates modeling grain sorghum ethanol, woody pulp ethanol, and palm oil biodiesel after this final rule and including the determinations in a rulemaking within 6 months. Our analyses project that they will be used in meeting the RFS2 volume standard in the near-term. During the course of the NPRM comment period, EPA received detailed information on these pathways and is currently in the process of analyzing these pathways. We have received comments on several additional feedstock/fuel pathways, including rapeseed/canola, camelina, sweet sorghum, wheat, and mustard seed, and we welcome parties to utilize the petition process described in Section V.C to request EPA to examine additional pathways.

We anticipate there could be additional cases where we currently do not have information on which to base a lifecycle GHG assessment perhaps because we are not yet aware of potential unique plant configurations or operations that could result in greater efficiencies than assumed in our analysis. In many cases, such alternative pathways could have been explicitly modeled as a reasonably straightforward extension of pathways we have modeled if the necessary information had been available. For example, while we have modeled specific enhancements to corn starch ethanol production such as membrane separation or corn oil extraction, there are likely other additional energy saving or co-product pathways available or under development by the industry. It is reasonable to also consider these alternative energy saving or co-product pathways based upon their technical merits. Other current or emerging pathways may require new analysis and modeling for EPA to fully evaluate compliance. For example, fuel pathways with feedstocks or fuel types not yet modeled by EPA may require additional modeling and, it follows, public comment before a determination of compliance can be made.

Therefore, for those fuel pathways that are different than those pathways EPA has listed in today's regulations, EPA is establishing a petition process whereby a party can petition the Agency to consider new pathways for GHG reduction threshold compliance. As described in Section V.C, the petition process is meant for parties with serious intention to move forward with production via the petitioned fuel pathway and who have moved sufficiently forward in the business process to show feasibility of the fuel pathway's implementation. In addition, if the petition addresses a fuel pathway that already has been determined to qualify as one or more types of renewable fuel under RFS (*e.g.,* renewable fuel, or advanced biofuel), the pathway must have the potential to result in qualifying for a renewable fuel type for which it was not previously qualified. Thus, for example, the Agency will not undertake any additional review for a party wishing to get a modified LCA value for a

previously approved fuel pathway if the desired new value would not change the overall pathway classification.

The petition must contain all the necessary information on the fuel pathway to allow EPA to effectively assess the lifecycle performance of the new fuel pathway. See Section V.C for a full description. EPA will use the data supplied via the petition and other pertinent data available to the Agency to evaluate whether the information for that fuel pathway, combined with information developed in this rulemaking for other fuel pathways that have been determined to exceed the threshold, is sufficient to allow EPA to evaluate the pathway for a determination of compliance. We expect such a determination would be pathway specific. For some fuel pathways with unique modifications or enhancements to production technologies in pathways otherwise modeled for the regulations listed today, EPA may be able to evaluate the pathway as a reasonably straight-forward extension of our current assessments. In such cases, we would expect to make a decision for that specific pathway without conducting a full rulemaking process. We would expect to evaluate whether the pathway is consistent with the definitions of renewable fuel types in the regulations, generally without going through rulemaking, and issue an approval or disapproval that applies to the petitioner. We anticipate that we will subsequently propose to add the pathway to the regulations. Other current or emerging fuel pathways may require significant new analysis and/or modeling for EPA to conduct an adequate evaluation for a compliance determination (*e.g.,* feedstocks or fuel types not yet included in EPA's assessments for this regulation). For these pathways, EPA would give notice and seek public comment on a compliance determination under the annual rulemaking process established in today's regulations. If we make a technical determination of compliance, then we anticipate the fuel producer will be able to generate RINs for fuel produced under the additional pathway following the next available quarterly update of the EPA Moderated Transaction System (EMTS). EPA will process those petitions as expeditiously as possible for those pathways which are closer to the commercial production stage than others. In all events, parties are expected to begin this process with ample lead time as compared to their commercial start dates. Further discussion of this petition process can be found in Section V.C.

We note again that the continued work of EPA and others is expected to result in improved models and data sources, and that re-analysis based on such updated information could revise these determinations. Any such reassessment that would impact compliance would necessarily go through rulemaking and would only be applicable to production from future facilities after the revised rule was finalized, as required by EISA.

4. Compliance With Renewable Biomass Provision

EISA changed the definition of "renewable fuel" to require that it be made from feedstocks that qualify as "renewable biomass." EISA's definition of the term "renewable biomass" limits the types of biomass as well as the types of land from which the biomass may be harvested. The definition includes:

- Planted crops and crop residue from agricultural land cleared prior to December 19, 2007 and actively managed or fallow on that date.
- Planted trees and tree residue from tree plantations cleared prior to December 19, 2007 and actively managed on that date.
- Animal waste material and byproducts.
- Slash and pre-commercial thinnings from non-federal forestlands that are neither old-growth nor listed as critically imperiled or rare by a State Natural Heritage program.
- Biomass cleared from the vicinity of buildings and other areas at risk of wildfire.
- Algae.
- Separated yard waste and food waste.

In today's rule, EPA is finalizing definitions for the many terms included within the definition of renewable biomass. Where possible, EPA has adhered to existing statutory, regulatory or industry definitions for these terms, although in some cases we have altered definitions to conform to EISA's statutory language, to further the goals of EISA, or for ease of program implementation. For example, EPA is defining "agricultural land" from which crops and crop residue can be harvested for RIN-generating renewable fuel production as including cropland, pastureland, and land enrolled in the Conservation Reserve Program. An in-depth discussion of the renewable biomass definitions can be found in Section II.B.4.

In keeping with EISA, under today's final rule, renewable fuel producers may only generate RINs for fuels made from feedstocks meeting the definition of renewable biomass. In order to implement this requirement, we are finalizing three potential mechanisms for domestic and foreign renewable fuel producers to verify that their feedstocks comply with this requirement. The first involves renewable biomass recordkeeping and reporting requirements by renewable fuel producers for their individual facilities. As an alternative to these individual recordkeeping and reporting requirements, the second allows renewable fuel producers to form a consortium to fund an independent third-party to conduct an annual renewable biomass quality-assurance survey, based on a plan approved by EPA. The third is an aggregate compliance approach applicable only to crops and crop residue from the U.S. It utilizes USDA's publicly available agricultural land data as the basis for an EPA determination of compliance with the renewable biomass requirements for these particular feedstocks. This determination will be reviewed annually, and if EPA finds it is no longer warranted, then renewable fuel producers using domestically grown crops and crop residue will be required to conduct individual or consortium-based verification processes to ensure that their feedstocks qualify as renewable biomass. These final provisions are described below, with a more in-depth discussion in Section II.B.4.

For renewable fuel producers using feedstocks other than planted crops or crop residue from agricultural land that do not choose to participate in the third-party survey funded by an industry consortium, the final renewable biomass recordkeeping and reporting provisions require that individual producers obtain documentation about their feedstocks from their feedstock supplier(s) and take the measures necessary to ensure that they know the source of their feedstocks and can demonstrate to EPA that they have complied with the EISA definition of renewable biomass. Specifically, EPA's renewable biomass reporting requirements for producers who generate RINs include a certification on renewable fuel production reports that the feedstock used for each renewable fuel batch meets the definition of renewable biomass. Additionally, producers will be required to include with their quarterly reports a summary of the types and volumes of feedstocks used throughout the quarter, as well as maps of the land from which the feedstocks used in the quarter were harvested. EPA's final renewable biomass recordkeeping provisions require renewable fuel producers to

maintain sufficient records to support their claims that their feedstocks meet the definition of renewable biomass, including maps or electronic data identifying the boundaries of the land where the feedstocks were produced, documents tracing the feedstocks from the land to the renewable fuel production facility, other written records from their feedstock suppliers that serve as evidence that the feedstock qualifies as renewable biomass, and for producers using planted trees or tree residue from tree plantations, written records that serve as evidence that the land from which the feedstocks were obtained was cleared prior to December 19, 2007 and actively managed on that date.

Based on USDA's publicly available agricultural land data, EPA is able to establish a baseline of the aggregate amount of U.S. agricultural land (meaning cropland, pastureland and CRP land in the United States) that is available for the production of crops and crop residues for use in renewable fuel production consistent with the definition of renewable biomass. EPA has determined that, in the aggregate this amount of agricultural land (land cleared or cultivated prior to EISA's enactment (December 19, 2007) and actively managed or fallow, and nonforested on that date) is expected to, at least in the near term, be sufficient to support EISA renewable fuel obligations and other foreseeable demands for crop products, without clearing and cultivating additional land. EPA also believes that economic factors will lead farmers to use the "agricultural land" available for crop production under EISA rather than bring new land into crop production. As a result, EPA is deeming renewable fuel producers using domestically-grown crops and crop residue as feedstock to be in compliance with the renewable biomass requirements, and those producers need not comply with the recordkeeping and quarterly reporting requirements as established for the non-crop-based biomass sector. However, EPA will annually review USDA data on lands in agricultural production to determine if these conclusions remain valid. If EPA determines that the 2007 baseline amount of eligible agricultural land has been exceeded, EPA will publish a notice of that finding in the **Federal Register**. At that point, renewable fuel producers using planted crops or crop residue from agricultural lands would be subject to the same recordkeeping and reporting requirements as other renewable fuel producers.

5. EPA-Moderated Transaction System

We introduced the EPA Moderated Transaction System (EMTS) in the NPRM as a new method for managing the generation of RINs and transactions involving RINs. EMTS is designed to resolve the RIN management issues of RFS1 that lead to widespread RIN errors, many times resulting in invalid RINs and often tedious remedial procedures to resolve those errors. It is also designed to address the added RIN categories, more complex RIN generation requirements, and additional volume of RINs associated with RFS2. Commenters broadly support EMTS and most stated that its use should coincide with the start of RFS2; however, many commenters expressed concerns over having sufficient time to implement the new system. In today's action, we are requiring the use of EMTS for all RFS2 RIN generations and transactions beginning July 1, 2010. EPA has utilized an open process for the development of EMTS since it was first introduced in the NPRM, conducting workshops and webinars, and soliciting stakeholder participation in its evaluation and testing. EPA pledges to work with the regulated community, as a group and individually, to ensure EMTS is successfully implemented. EPA anticipates that with this level of assistance, regulated parties will not experience significant difficulties in transitioning to the new system, and EPA believes that the many benefits of the new system warrant its immediate use.

6. Other Changes to the RFS Program

Today's final rule also makes a number of other changes to the RFS program that are described in more detail in Sections II and III below, including:

- *Grandfathering provisions:* Renewable fuel from existing facilities is exempt from the lifecycle GHG emission reduction threshold of 20% up to a baseline volume for that facility that will be established at the time of registration. As discussed in Section II.B.3, the exemption from the 20% GHG threshold applies only to renewable fuel that is produced from facilities which commenced construction on or before December 19, 2007, or in the case of ethanol plants that use natural gas or biodiesel for process heat, on or before December 31, 2009.
- *Renewable fuels produced from municipal solid waste (MSW):* The new renewable biomass definition in EISA modified the ability for MSW-derived fuels to qualify under the RFS program by restricting it to "separated yard waste or food waste." We are finalizing provisions that would allow certain portions of MSW to be included as renewable biomass, provided that reasonable separation has first occurred.
- *Equivalence Values:* We are generally maintaining the provisions from RFS1 that the Equivalence Value for each renewable fuel will be based on its energy content in comparison to ethanol, adjusted for renewable content. The cellulosic biofuel, advanced biofuel, and renewable fuel standards can be met with ethanol-equivalent volumes of renewable fuel. However, since the biomass-based diesel standard is a "diesel" standard, its volume must be met on a biodiesel-equivalent energy basis.
- *Cellulosic biofuel waiver credits:* If EPA reduces the required volume of cellulosic biofuel according to the waiver provisions in EISA, EPA will offer a number of credits to obligated parties no greater than the reduced cellulosic biofuel standard. These waiver credits are not allowed to be traded or banked for future use, and are only allowed to be used to meet the cellulosic biofuel standard for the year that they are offered. In response to concerns expressed in comments on the proposal, we are implementing certain restrictions on the use of these waiver credits. For example, unlike Cellulosic Biofuel RINs, waiver credits may not be used to meet either the advanced biofuel standard or the total renewable fuel standard. For the 2010 compliance period, since the cellulosic standard is lower than the level otherwise required by EISA, we are making cellulosic waiver credits available to obligated parties for end-of-year compliance should they need them at a price of $1.56 per gallon-RIN.
- *Obligated fuels:* EISA expanded the program to cover "transportation fuel", not just gasoline. Therefore, under RFS2, obligated fuel volumes will include all gasoline and all MVNRLM diesel fuel. Other fuels such as jet fuel and fuel intended for use in ocean-going vessels are not obligated fuels under RFS2. However, renewable fuels used in jet fuel or heating oil are valid for meeting the renewable fuel volume mandates. Similarly, while we are not including natural gas, propane, or electricity used in transportation as obligated fuels at this time, we will allow renewable forms of these fuels to qualify under the program for generating RINs.

B. Impacts of Increasing Volume Requirements in the RFS2 Program

The displacement of gasoline and diesel with renewable fuels has a wide

range of environmental and economic impacts. As we describe in Sections IV–IX, we have assessed many of these impacts for the final rule. It is difficult to ascertain how much of these impacts might be due to the natural growth in renewable fuel use due to market forces as crude oil prices rise versus what might be forced by the RFS2 standards. Regardless, these assessments provide important information on the wider public policy considerations related to renewable fuel production and use, climate change, and national energy security. Where possible, we have tried to provide two perspectives on the impacts of the renewable fuel volumes mandated in EISA—both relative to the RFS1 mandated volumes, and relative to a projection from EIA (AEO 2007) of renewable fuel volumes that would have been expected without EISA.

Based on the results of our analyses, when fully phased in by 2022, the increased volume of renewable fuel required by this final rule in comparison to the AEO 2007 forecast would result in 138 million metric tons fewer CO_2-equivalent GHG emissions (annual average over 30 years), the equivalent of removing 27 million vehicles from the road today.

At the same time, increases in emissions of hydrocarbons, nitrogen oxides, particulate matter, and other pollutants are projected to lead to increases in population-weighted annual average ambient PM and ozone concentrations, which in turn are anticipated to lead to up to 245 cases of adult premature mortality. The air quality impacts, however, are highly variable from region to region. Ambient $PM_{2.5}$ is likely to increase in areas associated with biofuel production and transport and decrease in other areas; for ozone, many areas of the country will experience increases and a few areas will see decreases. Ethanol concentrations will increase substantially; for the other modeled air toxics there are some localized impacts, but relatively little impact on national average concentrations. We note that the air quality modeling results presented in this final rule do not constitute the "anti-backsliding" analysis required by Clean Air Act section 211(v). EPA will be analyzing air quality impacts of increased renewable fuel use through that study and will promulgate appropriate mitigation measures under section 211(v), separate from this final action.

In addition to air quality, there are also expected to be adverse impacts on both water quality and quantity as the production of biofuels and their feedstocks increase.

In addition to environmental impacts, the increased volumes of renewable fuels required by this final rule are also projected to have a number of other energy and economic impacts. The increased renewable fuel use is estimated to reduce dependence on foreign sources of crude oil, increase domestic sources of energy, and diversify our energy portfolio to help in moving beyond a petroleum-based economy. The increased use of renewable fuels is also expected to have the added benefit of providing an expanded market for agricultural products such as corn and soybeans and open new markets for the development of cellulosic feedstock industries and conversion technologies. Overall, however, we estimate that the renewable fuel standards will result in significant net benefits, ranging between $16 and $29 billion in 2022.

Table I.B–1 summarizes the results of our impacts analyses of the volumes of renewable fuels required by the RFS2 standards in 2022 relative to the AEO2007 reference case and identifies the section where you can find further explanation of it. As we work to implement the requirements of EISA, we will continue to assess these impacts. These are the annual impacts projected in 2022 when the program is fully phased in. Impacts in earlier years would differ but in most cases were not able to be modeled or assessed for this final rule.

TABLE I.B–1—IMPACT SUMMARY OF THE RFS2 STANDARDS IN 2022 RELATIVE TO THE AEO2007 REFERENCE CASE (2007 DOLLARS)

Category	Impact in 2022	Section discussed
Emissions and Air Quality		
GHG Emissions	−138 million metric tons	V.D.
Non-GHG Emissions (criteria and toxic pollutants)	−1% to +10% depending on the pollutant	VI.A.
Nationwide Ozone	+0.12 ppb population-weighted seasonal max 8 hr average	VIII.D.
Nationwide $PM_{2.5}$	+0.002 μg/m^3 population-weighted annual average $PM_{2.5}$	VIII.D.
Nationwide Ethanol	+0.409 μg/m^3 population-weighted annual average	VI.D.
Other Nationwide Air Toxics	−0.0001 to −0.023 μg/m^3 population-weighted annual average depending on the pollutant.	VI.D.
$PM_{2.5}$-related Premature Mortality	33 to 85 additional cases of adult mortality (estimates vary by study)	VIII.D.
Ozone-related Premature Mortality	36 to 160 additional cases of adult mortality (estimates vary by study)	VIII.D.
Other Environmental Impacts		
Loadings to the Mississippi River from the Upper Mississippi River Basin.	Nitrogen: +1,430 million lbs. (1.2%) Phosphorus: +132 million lbs. (0.7%)	IX.
Fuel Costs		
Gasoline Costs	−2.4¢/gal	VII.D.
Diesel Costs	−12.1 ¢/gal	VII.D.
Overall Fuel Cost	−$11.8 Billion	VII.D.
Gasoline and Diesel Consumption	−13.6 Bgal	VII.C.
Food Costs		
Corn	+8.2%	VIII.A.
Soybeans	+10.3%	VIII.A.

TABLE I.B–1—IMPACT SUMMARY OF THE RFS2 STANDARDS IN 2022 RELATIVE TO THE AEO2007 REFERENCE CASE (2007 DOLLARS)—Continued

Category	Impact in 2022	Section discussed
Food	+$10 per capita	VIII.A.
Economic Impacts		
Energy Security	+$2.6 Billion	VIII.B.
Monetized Health Impacts	−$0.63 to −$2.2 Billion	VIII.D.
GHG Impacts (SCC)[a]	+$0.6 to $12.2 Billion (estimates vary by SCC assumption)	VIII.C.
Oil Imports	−$41.5 Billion	VIII.B
Farm Gate Food	+$3.6 Billion	VIII.A.
Farm Income	+$13 Billion (+36%)	VIII.A.
Corn Exports	−$57 Million (−8%)	VIII.A.
Soybean Exports	−$453 Million (−14%)	VIII.A.
Total Net Benefits[b]	+$13 to $26 Billion (estimates vary by SCC assumption)	VIII.F.

[a] The models used to estimate SCC values have not been exercised in a systematic manner that would allow researchers to assess the probability of different values. Therefore, the interim SCC values should not be considered to form a range or distribution of possible or likely values. *See* Section VIII.D for a complete summary of the interim SCC values.
[b] Sum of Overall Fuel Costs, Energy Security, Monetized Health Impacts, and GHG Impacts (SCC).

II. Description of the Regulatory Provisions

While EISA made a number of changes to CAA section 211(o) that must be reflected in the RFS program regulations, it left many of the basic program elements intact, including the mechanism for translating national renewable fuel volume requirements into applicable standards for individual obligated parties, requirements for a credit trading program, geographic applicability, treatment of small refineries, and general waiver provisions. As a result, many of the regulatory requirements of the RFS1 program will remain largely or, in some cases, entirely unchanged. These provisions include the distribution of RINs, separation of RINs, use of RINs to demonstrate compliance, provisions for exporters, recordkeeping and reporting, deficit carryovers, and the valid life of RINs.

The primary elements of the RFS program that we are changing to implement the requirements in EISA fall primarily into the following seven areas:

(1) Expansion of the applicable volumes of renewable fuel.

(2) Separation of the volume requirements into four separate categories of renewable fuel, with corresponding changes to the RIN and to the applicable standards.

(3) New definitions of renewable fuel, advanced biofuel, biomass-based diesel, and cellulosic biofuel.

(4) New requirement that renewable fuels meet certain lifecycle emission reduction thresholds.

(5) New definition of renewable biomass from which renewable fuels can be made, including certain land use restrictions.

(6) Expansion of the types of fuels that are subject to the standards to include diesel.

(7) Inclusion of specific types of waivers for different categories of renewable fuels and, in certain circumstances, EPA-generated credits for cellulosic biofuel.

EISA does not change the basic requirement under CAA 211(o) that the RFS program include a credit trading program. In the May 1, 2007 final rulemaking implementing the RFS1 program, we described how we reviewed a variety of approaches to program design in collaboration with various stakeholders. We finally settled on a RIN-based system for compliance and credit purposes as the one which met our goals of being straightforward, maximizing flexibility, ensuring that volumes are verifiable, and maintaining the existing system of fuel distribution and blending. RINs represent the basic framework for ensuring that the statutorily required volumes of renewable fuel are used as transportation fuel in the U.S. Since the RIN-based system generally has been successful in meeting the statutory goals, we are maintaining much of its structure under RFS2.

This section describes the regulatory changes we are finalizing to implement the new EISA provisions. Section III describes other changes to the RFS program that we considered or are finalizing, including an EPA-moderated RIN trading system that provides a context within which all RIN transfers will occur.

A. Renewable Identification Numbers (RINs)

Under RFS2, each RIN will continue to represent one gallon of renewable fuel in the context of demonstrating compliance with Renewable Volume Obligations (RVO), consistent with our approach under RFS1, and the RIN will continue to have unique information similar to the 38 digits in RFS1. However in the EPA Moderated Transaction System (EMTS), RIN detail information will be available but generally hidden during transactions. In general the codes within the RIN will have the same meaning under RFS2 as they do under RFS1, with the exception of the D code which will be expanded to cover the four categories of renewable fuel defined in EISA.

As described in Section I.A.2, the RFS2 regulatory program will go into effect on July 1, 2010, but the 2010 percentage standards issued as part of today's rule will apply to all gasoline and diesel produced or imported on or after January 1, 2010. As a result, some 2010 RINs will be generated under the RFS1 requirements and others will be generated under the RFS2 requirements, but all RINs generated in 2010 will be valid for meeting the 2010 annual standards. Since RFS1 RINs and RFS2 RINs will differ in the meaning of the D codes, we are implementing a mechanism for distinguishing between these two categories of RINs in order to appropriately apply them to the standards. In short, we are requiring the use of D codes under RFS2 that do not overlap the values for the D codes under RFS1. Table II.A–1 describes the D code definitions we are finalizing in today's action.

TABLE II.A–1—FINAL D CODE DEFINITIONS

D value	Meaning under RFS1	Meaning under RFS2
1	Cellulosic biomass ethanol	Not applicable.
2	Any renewable fuel that is not cellulosic biomass ethanol	Not applicable.
3	Not applicable	Cellulosic biofuel.
4	Not applicable	Biomass-based diesel.
5	Not applicable	Advanced biofuel.
6	Not applicable	Renewable fuel.
7	Not applicable	Cellulosic diesel.

Under this approach, D code values of 1 and 2 are only relevant for RINs generated under RFS1, and D code values of 3, 4, 5, 6, and 7 are only relevant for RINs generated under RFS2. As described in Section I.A.2, the RFS1 regulations will apply in January through June of 2010, while the RFS2 regulations will become effective on July 1, 2010. RINs generated under RFS1 regulations in the first three months of 2010 can be used for meeting the four 2010 standards applicable under RFS2. To accomplish this, these RFS1 RINs will be subject to the RFS1/RFS2 transition provisions wherein they will be deemed equivalent to one of the four RFS2 RIN categories using their RR and/or D codes. *See* Section II.G.4 for further description of how RFS1 RINs will be used to meet standards under RFS2. The determination of which D code will be assigned to a given batch of renewable fuel is described in more detail in Section II.D.2 below.

Table II.A–1 includes one D code corresponding to each of the four renewable fuel categories defined in EISA, and an additional D code of 7 corresponding to the unique, additional type of renewable fuel called cellulosic diesel. As described in the NPRM, a diesel fuel product produced from cellulosic feedstocks that meets the 60% GHG threshold could qualify as either cellulosic biofuel or biomass-based diesel. The NPRM described two possible approaches to this unique category of renewable fuel:

1. Have the producer of the cellulosic diesel designate their fuel up front as either cellulosic biofuel with a D code of 3, or biomass-based diesel with a D code of 4, limiting the subsequent potential in the marketplace for the RIN to be used for just one standard or the other.

2. Have the producer of the cellulosic diesel designate their fuel with a new cellulosic D code of 7, allowing the subsequent use of the RIN in the marketplace interchangeably for either the cellulosic biofuel standard or the biomass-based diesel standard.

We are finalizing the second option. By creating an additional D code of 7 to represent cellulosic diesel RINs, we believe its value in the marketplace will be maximized as it will be priced according to the relative demand for cellulosic biofuel and biomass-based diesel RINs. For instance, if demand for cellulosic biofuel RINs is higher than demand for biomass-based diesel RINs, then cellulosic diesel RINs will be priced as if they are cellulosic biofuel RINs. Not only does this approach benefit producers, but it allows obligated parties the flexibility to apply a RIN with a D code of 7 to either their cellulosic biofuel RVO or their biomass-based diesel RVO, depending on the number of RINs they have acquired to meet these two obligations. It also helps the functionality of the RIN program by helping protect against the potential for artificial RIN shortages in the marketplace for one standard or the other even though sufficient qualifying fuel was produced.

Under RFS2, each batch-RIN generated will continue to uniquely identify not only a specific batch of renewable fuel, but also every gallon-RIN assigned to that batch. Thus the RIN will continue to be defined as follows:

RIN: KYYYYCCCCFFFFFBBBBBRRDSS SSSSSSEEEEEEEE

Where:

K = Code distinguishing assigned RINs from separated RINs
YYYY = Calendar year of production or import
CCCC = Company ID
FFFFF = Facility ID
BBBBB = Batch number
RR = Code identifying the Equivalence Value
D = Code identifying the renewable fuel category
SSSSSSSS = Start of RIN block
EEEEEEEE = End of RIN block

B. New Eligibility Requirements for Renewable Fuels

Aside from the higher volume requirements, most of the substantive changes that EISA makes to the RFS program affect the eligibility of renewable fuels in meeting one of the four volume requirements. Eligibility is determined based on the types of feedstocks that are used, the land that is used to grow feedstocks for renewable fuel production, the processes that are used to convert those feedstocks into fuel, and the lifecycle greenhouse gas (GHG) emissions that are emitted in comparison to the gasoline or diesel that the renewable fuel displaces. This section describes these eligibility criteria and how we are implementing them for the RFS2 program.

1. Changes in Renewable Fuel Definitions

Under the previous Renewable Fuel Standards (RFS1), renewable fuel was defined generally as "any motor vehicle fuel that is used to replace or reduce the quantity of fossil fuel present in a fuel mixture used to fuel a motor vehicle". The RFS1 definition included motor vehicle fuels produced from biomass material such as grain, starch, fats, greases, oils, and biogas. The definition specifically included cellulosic biomass ethanol, waste derived ethanol, and biodiesel, all of which were defined separately. (*See* 72 FR 23915).

The definitions of renewable fuels under today's rule (RFS2) are based on the new statutory definition in EISA. Like the previous rules, the definitions in RFS2 include a general definition of renewable fuel, but unlike RFS1, we are including a separate definition of "Renewable Biomass" which identifies the feedstocks from which renewable fuels may be made.

Another difference in the definitions of renewable fuel is that RFS2 contains three subcategories of renewable fuels: (1) Advanced Biofuel, (2) Cellulosic Biofuel and (3) Biomass-Based Diesel. Each must meet threshold levels of reduction of greenhouse gas emissions as discussed in Section II.B.2. The specific definitions and how they differ from RFS1 follow below.

a. Renewable Fuel

"Renewable Fuel" is defined as fuel produced from renewable biomass and that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel. The definition of "Renewable Fuel" now refers to "transportation fuel" rather than referring to motor vehicle fuel.

"Transportation fuel" is also defined, and means fuel used in motor vehicles, motor vehicle engines, nonroad vehicles or nonroad engines (except for ocean going vessels). Also renewable fuel now includes heating fuel and jet fuel.

Given that the primary use of electricity, natural gas, and propane is not for fueling vehicles and engines, and the producer generally does not know how it will be used, we cannot require that producers or importers of these fuels generate RINs for all the volumes they produce as we do with other renewable fuels. However, we are allowing fuel producers, importers and end users to include electricity, natural gas, and propane made from renewable biomass as a RIN-generating renewable fuel in RFS only if they can identify the specific quantities of their product which are actually used as a transportation fuel,. This may be possible for some portion of renewable electricity and biogas since many of the affected vehicles and equipment are in centrally-fueled fleets supplied under contract by a particular producer or importer of natural gas or propane. A producer or importer of renewable electricity or biogas who documents the use of his product in a vehicle or engine through a contractual pathway would be allowed to generate RINs to represent that product, if it met the definition of renewable fuel. (This is also discussed in Section II.D.2.a)

b. Advanced Biofuel

"Advanced Biofuel" is a renewable fuel other than ethanol derived from corn starch and for which lifecycle GHG emissions are at least 50% less than the gasoline or diesel fuel it displaces. Advanced biofuel would be assigned a D code of 5 as shown in Table II.A–1.

While "Advanced Biofuel" specifically excludes ethanol derived from corn starch, it includes other types of ethanol derived from renewable biomass, including ethanol made from cellulose, hemicellulose, lignin, sugar or any starch other than corn starch, as long as it meets the 50% GHG emission reduction threshold. Thus, even if corn starch-derived ethanol were made so that it met the 50% GHG reduction threshold, it will still be excluded from being defined as an advanced biofuel. Such ethanol while not an advanced biofuel will still qualify as a renewable fuel for purposes of meeting the standards.

c. Cellulosic Biofuel

Cellulosic biofuel is renewable fuel derived from any cellulose, hemicellulose, or lignin each of which must originate from renewable biomass. It must also achieve a lifecycle GHG emission reduction of at least 60%, compared to the gasoline or diesel fuel it displaces. Cellulosic biofuel is assigned a D code of 3 as shown in Table II.A–1. Cellulosic biofuel in general also qualifies as both "advanced biofuel" and "renewable fuel".

The definition of cellulosic biofuel for RFS2 is broader in some respects than the RFS1 definition of "cellulosic biomass ethanol". That definition included only ethanol, whereas the RFS2 definition of cellulosic biofuels includes any biomass-to-liquid fuel such as cellulosic gasoline or diesel in addition to ethanol. The definition of "cellulosic biofuel" in RFS2 differs from RFS1 in another significant way. The RFS1 definition provided that ethanol made at any facility—regardless of whether cellulosic feedstock is used or not—may be defined as cellulosic if at such facility "animal wastes or other waste materials are digested or otherwise used to displace 90% or more of the fossil fuel normally used in the production of ethanol." This provision was not included in EISA, and therefore does not appear in the definitions pertaining to cellulosic biofuel in the final rule.

d. Biomass-Based Diesel

"Biomass-based diesel" includes both biodiesel (mono-alkyl esters) and non-ester renewable diesel (including cellulosic diesel). The definition of biodiesel is the same very broad definition of "biodiesel" that was in EPAct and in RFS1, and thus, it includes any diesel fuel made from biomass feedstocks. However, EISA added three restrictions. First, EISA requires that such fuel be made from renewable biomass. Second, its lifecycle GHG emissions must be at least 50% less than the diesel fuel it displaces. Third, the statutory definition of "Biomass-based diesel" excludes renewable fuel derived from co-processing biomass with a petroleum feedstock. In our proposed rule, we sought comment on two options for how co-processing could be treated. The first option considered co-processing to occur only if both petroleum and biomass feedstock are processed in the same unit simultaneously. The second option considered co-processing to occur if renewable biomass and petroleum feedstock are processed in the same unit at any time; i.e., either simultaneously or sequentially. Under the second option, if petroleum feedstock was processed in the unit, then no fuel produced from such unit, even from a biomass feedstock, would be deemed to be biomass-based diesel.

We selected the first option to be used in the final rule. Under this approach, a batch of fuel qualifying for the D code of 4 that is produced in a processing unit in which only renewable biomass is the feedstock for such batch, will meet the definition of "Biomass-Based Diesel. Thus, serial batch processing in which 100% vegetable oil is processed one day/week/month and 100% petroleum the next day/week/month could occur without the activity being considered "co-processing." The resulting products could be blended together, but only the volume produced from vegetable oil will count as biomass-based diesel. We believe this is the most straightforward approach and an appropriate one, given that it would allow RINs to be generated for volumes of fuel meeting the 50% GHG reduction threshold that is derived from renewable biomass, while not providing any credit for fuel derived from petroleum sources. In addition, this approach avoids the need for potentially complex provisions addressing how fuel should be treated when existing or even mothballed petroleum hydrotreating equipment is retrofitted and placed into new service for renewable fuel production or vice versa.

Under today's rule, any fuel that does not satisfy the definition of biomass-based diesel only because it is co-processed with petroleum will still meet the definition of "Advanced Biofuel" provided it meets the 50% GHG threshold and other criteria for the D code of 5. Similarly it will meet the definition of renewable fuel if it meets a GHG emission reduction threshold of 20%. In neither case, however, will it meet the definition of biomass-based diesel.

This restriction is only really an issue for renewable diesel and biodiesel produced via the fatty acid methyl ester (FAME) process. For other forms of biodiesel, it is never made through any sort of co-processing with petroleum.[3] Producers of renewable diesel must therefore specify whether or not they use "co-processing" to produce the fuel in order to determine the correct D code for the RIN.

e. Additional Renewable Fuel

The statutory definition of "additional renewable fuel" specifies fuel produced

[3] The production of biodiesel (mono alkyl esters) does require the addition of methanol which is usually derived from natural gas, but which contributes a very small amount to the resulting product. We do not believe that this was intended by the statute's reference to "co-processing" which we believe was intended to address only renewable fats or oils co-processed with petroleum in a hydrotreater to produce renewable diesel.

from renewable biomass that is used to replace or reduce fossil fuels used in heating oil or jet fuel. EISA indicates that EPA may allow for the generation of credits for such additional renewable fuel that will be valid for compliance purposes. Under the RFS program, RINs operate in the role of credits, and RINs are generated when renewable fuel is produced rather than when it is blended. In most cases, however, renewable fuel producers do not know at the time of fuel production (and RIN generation) how their fuel will ultimately be used.

Under RFS1, only RINs assigned to renewable fuel that was blended into motor vehicle fuel (i.e., highway fuel) are valid for compliance purposes. We therefore created special provisions requiring that RINs be retired if they were assigned to renewable fuel that was ultimately blended into nonroad fuel. The new EISA provisions regarding additional renewable fuel make the RFS1 requirement for retiring RINs unnecessary if renewable fuel is blended into heating oil or jet fuel. As a result, we have modified the regulatory requirements to allow RINs assigned to renewable fuel blended into heating oil or jet fuel in addition to highway and nonroad transportation fuels to continue to be valid for compliance purposes. From a regulatory standpoint, there is no difference between renewable fuels used for transportation purposes, versus heating oil and jet fuels.

EISA uses the term "home heating oil" in the definition of "additional renewable fuel." The statute does not clarify whether the term should be interpreted to refer only to heating oil actually used in homes, or to all fuel of a type that can be used in homes. We note that the term "home heating oil" is typically used in industry in the latter manner, to refer to a type of fuel, rather than a particular use of it, and the term is typically used interchangeably in industry with heating oil, heating fuel, home heating fuel, and other terms depending on the region and market. We believe this broad interpretation based on typical industry usage best serves the goals and purposes of the statute. If EPA interpreted the term to apply only to heating oil actually used in homes, we would necessarily require tracking of individual gallons from production through ultimate use in use in homes in order to determine eligibility of the fuel for RINs. Given the fungible nature of the oil delivery market, this would likely be sufficiently difficult and potentially expensive so as to discourage the generation of RINs for renewable fuels used as home heating oil. This problem would be similar to that which arose under RFS1 for certain renewable fuels (in particular biodiesel) that were produced for the highway diesel market but were also suitable for other markets such as heating oil and non-road applications where it was unclear at the time of fuel production (when RINs are typically generated under the RFS program) whether the fuel would ultimately be eligible to generate RINs. Congress eliminated the complexity with regards to non-road applications in RFS2 by making all fuels used in both motor vehicle and nonroad applications subject to the renewable fuel standard program. We believe it best to interpret the Act so as to also avoid this type of complexity in the heating oil context. Thus, under today's regulations, RINs may be generated for renewable fuel used as "heating oil," as defined in existing EPA regulations at 80.2(ccc). In addition to simplifying implementation and administration of the Act, this interpretation will best realize the intent of EISA to reduce or replace the use of fossil fuels,

f. Cellulosic Diesel

In the proposed rule, we sought comment on how diesel made from cellulosic feedstocks should be considered. Specifically, a diesel fuel product produced from cellulosic feedstocks that meets the 60% GHG threshold could qualify as either cellulosic biofuel or biomass-based diesel. Based on comments received, and as discussed previously in Section II.A, today's rule requires the cellulosic diesel producer to categorize their product as cellulosic diesel with a D code of 7. It can then be traded in the marketplace and used for compliance with either the biomass-based diesel standard or the cellulosic biofuel standard.

2. Lifecycle GHG Thresholds

As part of the new definitions that EISA creates for cellulosic biofuel, biomass-based diesel, advanced biofuel, and renewable fuel, EISA also sets minimum performance measures or "thresholds" for lifecycle GHG emissions. These thresholds represent the percent reduction in lifecycle GHGs that is estimated to occur when a renewable fuel displaces gasoline or diesel fuel. Table II.B.2–1 lists the thresholds established by EISA.

TABLE II.B.2–1—LIFECYCLE GHG THRESHOLDS IN EISA

[Percent reduction from a 2005 gasoline or diesel baseline]

Renewable fuel	20%
Advanced biofuel	50%
Biomass-based diesel	50%
Cellulosic biofuel	60%

There are also special provisions for each of these thresholds:

Renewable fuel: The 20% threshold only applies to renewable fuel from new facilities that commenced construction after December 19, 2007, with an additional exemption from the 20% threshold for ethanol plants that commenced construction in 2008 or 2009 and are fired with natural gas, biomass, or any combination thereof. Facilities not subject to the 20% threshold are "grandfathered." *See* Section II.B.3 below for a complete discussion of grandfathering. Also, EPA can adjust the 20% threshold to as low as 10%, but the adjustment must be the minimum possible, and the resulting threshold must be established at the maximum achievable level based on natural gas fired corn-based ethanol plants.

Advanced biofuel and biomass-based diesel: The 50% threshold can be adjusted to as low as 40%, but the adjustment must be the minimum possible and result in the maximum achievable threshold taking cost into consideration. Also, such adjustments can be made only if it is determined that the 50% threshold is not commercially feasible for fuels made using a variety of feedstocks, technologies, and processes.

Cellulosic biofuel: Similarly to advanced biofuel and biomass-based diesel, the 60% threshold applicable to cellulosic biofuel can be adjusted to as low as 50%, but the adjustment must be the minimum possible and result in the maximum achievable threshold taking cost into consideration. Also, such adjustments can be made only if it is determined that the 60% threshold is not commercially feasible for fuels made using a variety of feedstocks, technologies, and processes.

Our analyses of lifecycle GHG emissions, discussed in detail in Section V, identified a range of fuel pathways that are capable of complying with the GHG performance thresholds for each of these separate fuel standards. Thus, we have determined that the GHG thresholds in Table II.B.2–1 should not be adjusted. Further discussion of this determination can be found in Section V.C.

3. Renewable Fuel Exempt From 20 Percent GHG Threshold

After considering comments received, the Agency has decided to implement the proposed option for interpreting the grandfathering provisions that provide an indefinite exemption from the 20 percent GHG threshold for renewable fuel facilities which have commenced construction prior to December 19, 2007. For these facilities, only the baseline volume of renewable fuel is exempted. For ethanol facilities which commenced construction after that date and which use natural gas, biofuels or a combination thereof, we proposed that such facilities would be "deemed compliant" with the 20 percent GHG threshold. The exemption for such facilities is conditioned on construction being commenced on or before December 31, 2009, and is specific only to facilities which produce ethanol only, per language in EISA. The exemption would continue indefinitely, provided the facility continues to use natural gas and/or biofuel. This section provides the background and summary of the original proposal, and the reasons for the selection of this option.

a. General Background of the Exemption Requirement

EISA amends section 211(o) of the Clean Air Act to provide that renewable fuel produced from new facilities which commenced construction after December 19, 2007 must achieve at least a 20% reduction in lifecycle greenhouse gas emissions compared to baseline lifecycle greenhouse gas emissions.[7] Facilities that commenced construction before December 19, 2007 are "grandfathered" and thereby exempt from the 20% GHG reduction requirement.

For facilities that produce ethanol and for which construction commenced after December 19, 2007, section 210 of EISA states that "for calendar years 2008 and 2009, any ethanol plant that is fired with natural gas, biomass, or any combination thereof is deemed to be in compliance with the 20% threshold." Since all renewable fuel production facilities that commenced construction prior to the date of EISA enactment are covered by the more general grandfathering provision, this exemption can only apply to those facilities that commenced construction after enactment of EISA, and before the end of 2009. We proposed that the statute be interpreted to mean that fuel from such qualifying facilities, regardless of date of startup of operations, would be exempt from the 20% GHG threshold requirement for the same time period as facilities that commence construction prior to December 19, 2007, *provided* that such plants commence construction on or before December 31, 2009, complete such construction in a reasonable amount of time, and continue to burn only natural gas, biomass, or a combination thereof. Most commenters generally agreed with our proposal, while other commenters argued that the exemption was only meant to last for a two-year period. As we noted in the NPRM, we believe that it would be a harsh result for investors in these new facilities, and would be generally inconsistent with the energy independence goals of EISA, to interpret the Act such that these facilities would only be guaranteed two years of participation in the RFS2 program. In light of these considerations, we continue to believe that it is an appropriate interpretation of the Act to allow the deemed compliant exemption to continue indefinitely with the limitations we proposed. Therefore we are making final this interpretation in today's rule.

b. Definition of Commenced Construction

In defining "commence" and "construction", we proposed to use the definitions of "commence" and "begin actual construction" from the Prevention of Significant Deterioration (PSD) regulations, which draws upon definitions in the Clean Air Act. (40 CFR 52.21(b)(9) and (11)). Specifically, under the PSD regulations, "commence" means that the owner or operator has all necessary preconstruction approvals or permits and either has begun a continuous program of actual on-site construction to be completed in a reasonable time, or entered into binding agreements which cannot be cancelled or modified without substantial loss." Such activities include, but are not limited to, "installation of building supports and foundations, laying underground pipe work and construction of permanent storage structures." We proposed adding language to the definition that is currently not in the PSD definition with respect to multi-phased projects. We proposed that for multi-phased projects, commencement of construction of one phase does not constitute commencement of construction of any later phase, unless each phase is "mutually dependent" on the other on a physical and chemical basis, rather than economic.

The PSD regulations provide additional conditions beyond addressing what constitutes commencement. Specifically, the regulations require that the owner or operator "did not discontinue construction for a period of 18 months or more and completed construction within a reasonable time." (40 CFR 52.21(i)(4)(ii)(c)). While "reasonable time" may vary depending on the type of project, we proposed that for RFS2 a reasonable time to complete construction of renewable fuel facilities be no greater than 3 years from initial commencement of construction. We sought comment on this time frame.

Commenters generally agreed with our proposed definition of commenced construction. Some commenters felt that the 3 year time frame was not a "reasonable time" to complete construction in light of the economic difficulties that businesses have been and will likely continue to be facing. We recognize that there have been extreme economic problems in the past year. Based on historical data which show construction of ethanol plants typically take about one year, we believe that the 3-year time frame allows such conditions to be taken into account and that it is an appropriate and fair amount of time to allow for completion. Therefore, we are not extending the amount of time that constitutes "reasonable" to five years as was suggested.

c. Definition of Facility Boundary

We proposed that the grandfathering and deemed compliant exemptions apply to "facilities." Our proposed definition of this term is similar in some respects to the definition of "building, structure, facility, or installation" contained in the PSD regulations in 40 CFR 52.21. We proposed to modify the definition, however, to focus on the typical renewable fuel plant. We proposed to describe the exempt "facilities" as including all of the activities and equipment associated with the manufacture of renewable fuel which are located on one property and under the control of the same person or persons. Commenters agreed with our proposed definition of "facility" and we are making that definition final today.

d. Proposed Approaches and Consideration of Comments

We proposed one basic approach to the exemption provisions and sought comment on five additional options. The basic approach would provide an indefinite extension of grandfathering and deemed compliant status but with a limitation of the exemption from the 20% GHG threshold to a baseline volume of renewable fuel. The five additional options for which we sought

comment were: (1) Expiration of exemption for grandfathered and "deemed compliant" status when facilities undergo sufficient changes to be considered "reconstructed"; (2) Expiration of exemption 15 years after EISA enactment, industry-wide; (3) Expiration of exemption 15 years after EISA enactment with limitation of exemption to baseline volume; (4) "Significant" production components are treated as facilities and grandfathered or deemed compliant status ends when they are replaced; and (5) Indefinite exemption and no limitations placed on baseline volumes.

i. Comments on the Proposed Basic Approach

Generally, commenters supported the basic approach in which the volume of renewable fuel from grandfathered facilities exempt from the 20% GHG reduction threshold would be limited to baseline volume. One commenter objected to the basic approach and argued that the statute's use of the word "new" and the phrase "after December 19, 2007" provided evidence that facilities which commenced construction prior to that date would not ever be subject to the threshold regardless of the volume produced from such facilities. In response, we note first that the statute does not provide a definition of the term "new facilities" for which the 20% GHG threshold applies. We believe that it would be reasonable to include within our interpretation of this term a volume limitation, such that a production plant is considered a new facility to the extent that it produces renewable fuel above baseline capacity. This approach also provides certainty in the marketplace in terms of the volumes of exempt fuel, and a relatively straightforward implementation and enforcement mechanism as compared to some of the other alternatives considered. Furthermore, EPA believes that the Act should not be interpreted as allowing unlimited expansion of exempt facilities for an indefinite time period, with all volumes exempt, as suggested by the commenter. Such an approach would likely lead to a substantial increase in production of fuel that is not subject to any GHG limitations, which EPA does not believe would be consistent with the objectives of the Act.

We solicited comment on whether changes at a facility that resulted in an increase in GHG emissions, such as a change in fuel or feedstock, should terminate the facility's exemption from the 20 percent GHG threshold. Generally, commenters did not support such a provision, pointing out that there are many variations within a plant that cannot be adequately captured in a table of fuel and feedstock pathways as we proposed (*see* 74 FR 24927). Implementing such a provision would create questions of accounting and tracking that would need to be evaluated on a time-consuming case-by-case basis. For example, if a switch to a different feedstock or production process resulted in less efficiency, facilities may argue that they are increasing energy efficiency elsewhere (e.g. purchasing waste heat instead of burning fuel onsite to generate steam). We would then need to assess such changes to track the net energy change a plant undergoes. Given the added complexity and difficulty in carrying out such an option, we have decided generally not to implement it. There is an exception, however, for "deemed compliant" facilities. These facilities achieve their status in part by being fired only by natural gas or biomass, or a combination thereof. Today's rule provides, as proposed, that these facilities will lose their exemption if they switch to a fuel other than natural gas, biomass, or a combination thereof, since these were conditions that Congress deemed critical to granting them the exemption from the 20% GHG reduction requirement.

We also solicited comment on whether we should allow a 10% tolerance on the baseline volume for which RINs can be generated without complying with the 20% GHG reduction threshold to allow for increases in volume due to debottlenecking. Some favored this concept, while others argued that the tolerance should be set at 20 percent. After considering the comments received, we have decided that a 10% (and 20%) level is not appropriate for this regulation for the following reasons: (1) We have decided to interpret the exemption of the baseline volume of renewable fuel from the 20 percent requirement as extending indefinitely. Any tolerance provided could, therefore, be present in the marketplace for a considerable time period; (2) increases in volume of 10% or greater could be the result of modifications other than debottlenecking. Consistent with the basic approach we are taking today towards interpreting the grandfathering and deemed compliant provisions, we believe that the fuel produced as a result of such modifications comes from "new facilities" within the meaning of the statute, and should be subject to the 20% GHG reduction requirement; (3) we are allowing baseline volume to be based on the maximum capacity that is allowed under state and federal air permits. With respect to the last reason, facilities that have been operating below the capacity allowed in their state permits would be able to claim a baseline volume based on the maximum capacity. As such, these facilities may indeed be able to increase their volume by 10 to 20 percent by virtue of how their baseline volume is defined. We believe this is appropriate, however, since their permits should reflect their design, and the fuel resulting from their original pre-EISA (or pre-2010, for deemed compliant facilities) design should be exempt from the 20% GHG reduction requirement. Nevertheless, we recognize and agree with commenters that some allowances should be made for minor changes brought about by normal maintenance which are consistent with the proper operation of a facility. EPA is not aware of a particular study or analysis that could be used as a basis for picking a tolerance level reflecting this concept, We believe, however, that the value should be relatively small, so as not to encourage plant expansions that are unrelated to debottlenecking. We believe that a 5% tolerance level is consistent with these considerations, and have incorporated that value in today's rule.

ii. Comments on the Expiration of Grandfathered Status

Commenters who supported an expiration of the exemption did so because of concerns that the proposed approach of providing an indefinite exemption would not provide any incentives to bring these plants into compliance with current standards. They also objected to plants being allowed an indefinite period beyond the time period when it could be expected that they would have paid off their investors. The commenters argued that the cost of operation for such plants would be less than competing plants that do have to comply with current standards; as such, commenters opposed to the basic approach felt an indefinite exemption would be a subsidy to plants that will never comply with the 20 percent threshold level. The renewable fuels industry, on the other hand, viewed the options that would set an expiration date (either via cumulative reconstruction, or a 15-year period from date of enactment) as harsh, particularly if the lifecycle analysis results make it costly for existing facilities to meet the 20% threshold. Some also argued that no such temporal limitation appears in the statute.

We considered such comments, but in light of recent lifecycle analyses we conducted in support of this rule we have concluded that many of the current

technology corn ethanol plants may find it difficult if not impossible to retrofit existing plants to comply with the 20 percent GHG reduction threshold. In addition, the renewable fuels industry viewed the alternative proposals that would set an expiration date (either via cumulative reconstruction, or a 15-year period from date of enactment) as harsh, particularly if the lifecycle analysis results make it costly for existing facilities to meet the 20% threshold. Given the difficulty of meeting such threshold, owners of such facilities could decide to shut down the plant. Given such implications of meeting the 20 percent threshold level for existing facilities we have chosen not to finalize any expiration date.

e. Final Grandfathering Provisions

For the reasons discussed above, the Agency has decided to proceed with the proposed baseline volume approach, rather than the expiration options. We hold open the possibility, therefore, of revisiting and reproposing the exemption provision in a future rulemaking to take such advances into account. Ending the grandfathering exemption after its usefulness is over would help to streamline the ongoing implementation of the program.

The final approach adopted today is summarized as follows:

i. Increases in volume of renewable fuel produced at grandfathered facilities due to expansion

For facilities that commenced construction prior to December 19, 2007, we are defining the baseline volume of renewable fuel exempt from the 20% GHG threshold requirement to be the maximum volumetric capacity of the facility that is allowed in any applicable state air permit or Federal Title V operating permit.[4] We had proposed in the NPRM that nameplate capacity be defined as permitted capacity, but that if the capacity was not stipulated in any federal, state or local air permit, then the actual peak output should be used. We have decided that since permitted capacity is the limiting condition, by virtue of it being an enforceable limit contained in air permits, that the term "nameplate capacity" is not needed. In addition, we are allowing a 5% tolerance as discussed earlier. Therefore, today's rule defines permitted capacity as 105% of the maximum permissible volume output of renewable fuel allowed under operating conditions specified in all applicable preconstruction, construction and operating permits issued by regulatory authorities (including local, regional, state or a foreign equivalent of a state, and federal permits). If the capacity of a facility is not stipulated in such air permits, then the grandfathered volume is 105% of the maximum annual volume produced for any of the last five calendar years prior to 2008. Volumes greater than this amount which may typically be due to expansions of the facility which occur after December 19, 2007, will be subject to the 20% GHG reduction requirement if the facility wishes to generate RINs for the incremental expanded volume. The increased volume will be considered as if produced from a "new facility" which commenced construction after December 19, 2007. Changes that might occur to the mix of renewable fuels produced within the facility are irrelevant—they remain grandfathered as long as the overall volume falls within the baseline volume. Thus, for example, if an ethanol facility changed its operation to produce butanol, but the baseline volume remained the same, the fuel so produced would be exempt from the 20% GHG reduction requirement.

The baseline volume will be defined as above for deemed compliant facilities (those ethanol facilities fired by natural gas or biomass or a combination thereof that commenced construction after December 19, 2007 but before January 1, 2010) with the exception that if the maximum capacity is not stipulated in air permits, then the exempt volume is the maximum annual peak production during the plant's first three years of operation. In addition, any production volume increase that is attributable to construction which commenced prior to December 31, 2009 would be exempt from the 20% GHG threshold, provided that the facility continued to use natural gas, biomass or a combination thereof for process energy. Because deemed compliant facilities owe their status to the fact that they use natural gas, biomass or a combination thereof for process heat, their status will be lost, and they will be subject to the 20% GHG threshold requirement, at any time that they change to a process energy source other than natural gas and/or biomass. Finally, because EISA limits deemed compliant facilities to ethanol facilities, if there are any changes in the mix of renewable fuels produced by the facility, only the ethanol volume remains grandfathered. We had solicited comment on whether fuels other than ethanol could also be deemed compliant. Based on comments received and additional consideration to this matter, we decided that because the Act does not authorize EPA to allow fuels other than ethanol, the deemed compliant provisions will apply only to facilities producing that fuel.

Volume limitations contained in air permits may be defined in terms of peak hourly production rates or a maximum annual capacity. If they are defined only as maximum hourly production rates, they will need to be converted to an annual rate. Because assumption of a 24-hour per day production over 365 days per year (8,760 production hours) may overstate the maximum annual capacity we are requiring a conversion rate of 95% of the total hours in a year (8,322 production hours) based on typical operating "uptime" of ethanol facilities.

The facility registration process (*see* Section II.C) will be used to define the baseline volume for individual facilities. Owners and operators must submit information substantiating the permitted capacity of the plant, or the maximum annual peak capacity if the maximum capacity is not stipulated in a federal, state or local air permit, or EPA Title V operating permit. Copies of applicable air permits which stipulate the maximum annual capacity of the plant, must be provided as part of the registration process. Subsequent expansions at a grandfathered facility that results in an increase in volume above the baseline volume will subject the increase in volume to the 20% GHG emission reduction threshold (but not the original baseline volume). Thus, any new expansions will need to be designed to achieve the 20% GHG reduction threshold if the facility wants to generate RINs for that volume. Such determinations will be made on the basis of EPA-defined fuel pathway categories that are deemed to represent such 20% reduction.

EPA enforcement personnel commented that claims for an exemption from the 20% GHG reduction requirement should be made promptly, so that they can be verified with recent supporting information. They were concerned, in particular, that claims for exempt status could be made many years into the future for facilities that may or may not have concluded construction within the required time period, but delayed actual production of renewable fuel due to market conditions or other reasons. EPA believes that this comment has merit, and has included a requirement in Section 80.1450(f) of the final rule for registration of facilities claiming an exemption from the 20% GHG reduction requirement by May 1,

[4] Volumes also include expansions to existing facilities, provided that the construction for such expansion commences prior to December 19, 2007. In such instances, the total volume from the original facility plus the additional volume due to expansion is grandfathered.

2013. This provision does not require actual fuel production, but simply the filing of registration materials that assert a claim for exempt status. It will benefit both fuel producers, who will likely be able to more readily collect the required information if it is done promptly, and EPA enforcement personnel seeking to verify the information. However, given the potentially significant implications of this requirement for facilities that may qualify for the exemption but miss the registration deadline, the rule also provides that EPA may waive the requirement if it determines that the submission is verifiable to the same extent as a timely-submitted registration.

ii. Replacements of Equipment

If production equipment such as boilers, conveyors, hoppers, storage tanks and other equipment are replaced, it would not be considered construction of a "new facility" under this option of today's final rule—the baseline volume of fuel would continue to be exempt from the 20% GHG threshold. We sought comment on an approach that would require that if coal-fired units are replaced, that the replacement units must be fired with natural gas or biofuel for the product to be eligible for RINs that do not satisfy the 20% GHG threshold. Some commenters supported such an approach. We agreed, however, with other commenters who point out that the language in EISA provides for an indefinite exemption for grandfathered facilities. While we interpret the statute to limit the exemption to the baseline volume of a grandfathered facility, we do not interpret the language to allow EPA to require that replacements of coal fired units be natural gas or biofuel. Thus replacements of coal fired equipment will not affect the facility's grandfathered status.

iii. Registration, Recordkeeping and Reporting

Facility owner/operators will be required to provide evidence and certification of commencement of construction. Such certification will require copies of all applicable air permits that apply to the construction and operation of the facility. Owner/operators must provide annual records of process fuels used on a BTU basis, feedstocks used and product volumes. For facilities that are located outside the United States (including outside the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands) owners will be required to provide certification as well. Since the definition of commencement of construction includes having all necessary air permits, we will require that facilities outside the United States certify that such facilities have obtained all necessary permits for construction and operation required by the appropriate national and local environmental agencies.

4. New Renewable Biomass Definition and Land Restrictions

As explained in Section I, EISA lists seven types of feedstock that qualify as "renewable biomass." EISA limits not only the types of feedstocks that can be used to make renewable fuel, but also the land that these renewable fuel feedstocks may come from. Specifically, EISA's definition of renewable biomass incorporates land restrictions for planted crops and crop residue, planted trees and tree residue, slash and pre-commercial thinnings, and biomass from wildfire areas. EISA prohibits the generation of RINs for renewable fuel made from feedstock that does not meet the definition of renewable biomass, which includes not meeting the associated land restrictions. The following sections describe EPA's interpretation of several key terms related to the definition of renewable biomass, and the approach in today's rule to implementing the renewable biomass requirements.

a. Definitions of Terms

EISA's renewable biomass definition includes a number of terms that require definition. The following sections discuss EPA's definitions for these terms, which were developed with ease of implementation and enforcement in mind. We have made every attempt to define these terms as consistently with other federal statutory and regulatory definitions as well as industry standards as possible, while keeping them workable for purposes of program implementation.

i. Planted Crops and Crop Residue

The first type of renewable biomass described in EISA is planted crops and crop residue harvested from agricultural land cleared or cultivated at any time prior to December 19, 2007, that is either actively managed or fallow, and nonforested. We proposed to interpret the term "planted crops" to include all annual or perennial agricultural crops that may be used as feedstock for renewable fuel, such as grains, oilseeds, and sugarcane, as well as energy crops, such as switchgrass, prairie grass, and other species, providing that they were intentionally applied to the ground by humans either by direct application as seed or nursery stock, or through intentional natural seeding by mature plants left undisturbed for that purpose. We received numerous comments on our proposed definition of "planted crops," largely in support of our proposed definition. However, some commenters noted that "microcrops," such as duckweed, a flowering plant typically grown in ponds or tanks, are also being investigated for used as renewable fuel feedstocks. These microcrops are typically grown in a similar manner to algae, but cannot be categorized as algae since they are relatively more complex organisms. EPA's proposed definition would have unintentionally excluded microcrops such as duckweed through the requirement that planted crops be "applied to the ground." After considering comments received, EPA does not believe that there is any basis under EISA for excluding from the definition of renewable biomass crops such as duckweed that are applied to a tank or pond for growth rather than to the soil. As with other planted crops, these ponds or tanks must be located on existing "agricultural land," as described below, to qualify as renewable biomass under EISA. Therefore, including such microcrops within the definition of renewable biomass will not result in the direct loss of forestland or other ecologically sensitive land that Congress sought to protect through the land restrictions in the definition of renewable biomass. Doing so will further the objectives of the statute of promoting the development of emerging technologies to produce clean alternatives to petroleum-based fuels, and to further U.S. energy independence.

For these reasons, we are finalizing our proposed definition of "planted crops," with the inclusion of provisions allowing for the growth of "microcrops" in ponds or tanks that are located on agricultural land. Our final definition also includes a reference to "vegetative propagation," in which a new plant is produced from an existing vegetative structure, as one means by which planted crops may reproduce, since this is an important method of reproduction for microcrops such as duckweed. The final definition of "planted crops" includes all annual or perennial agricultural crops from existing agricultural land that may be used as feedstock for renewable fuel, such as grains, oilseeds, and sugarcane, as well as energy crops, such as switchgrass, prairie grass, duckweed and other species (but not including algae species or planted trees), providing that they

were intentionally applied by humans to the ground, a growth medium, or a pond or tank, either by direct application as seed or plant, or through intentional natural seeding or vegetative propagation by mature plants introduced or left undisturbed for that purpose. We note that because EISA contains specific provisions for planted trees and tree residue from tree plantations, our final definition of planted crops in EISA excludes planted trees, even if they may be considered planted crops under some circumstances.

We proposed that "crop residue" be limited to the residue, such as corn stover and sugarcane bagasse, left over from the harvesting of planted crops. We sought comment on including biomass from agricultural land removed for purposes of invasive species control or fire management. We received many comments supporting the inclusion of biomass removed from agricultural land for purposes of invasive species control and/or fire management. We believe that such biomass is typically removed from agricultural land for the purpose of preserving or enhancing its value in agricultural crop production. It may be removed at the time crops are harvested, post harvest, periodically (*e.g.*, for pastureland) or during extended fallow periods. We agree with the commenters that this material is a form of biomass residue related to crop production, whether or not derived from a crop itself, and, therefore, are modifying the proposed definition of "crop residue" to include it. We also received comments encouraging us to expand the definition of crop residue to include materials left over after the processing of the crop into a useable resource, such as husks, seeds, bagasse and roots. EPA agrees with these comments and has altered the final definition to cover such materials. Based on comments received, our final definition of "crop residue" is the biomass left over from the harvesting or processing of planted crops from existing agricultural land and any biomass removed from existing agricultural land that facilitates crop management (including biomass removed from such lands in relation to invasive species control or fire management), whether or not the biomass includes any portion of a crop or crop plant.

Our proposed regulations restricted planted crops and crop residue to that harvested from existing agricultural land, which, under our proposed definition, includes three land categories—cropland, pastureland, and Conservation Reserve Program (CRP) land. We proposed to define cropland as land used for the production of crops for harvest, including cultivated cropland for row crops or close-grown crops and non-cultivated cropland for horticultural crops. We proposed to define pastureland as land managed primarily for the production of indigenous or introduced forage plants for livestock grazing or hay production, and to prevent succession to other plant types. We also proposed that CRP land, which is administered by USDA's Farm Service Agency, qualify as "agricultural land" under RFS2.

EPA received numerous comments on our proposed definition of existing agricultural land. Generally, commenters were in support of our definition of "cropland" and its inclusion in the definition of existing agricultural land. Additionally, commenters generally did not object to CRP lands or pastureland being included in the definition of agricultural land. Based on our consideration of comments received on the proposed rule, EPA is including cropland, pastureland and CRP land in the definition of existing agricultural land, as proposed.

We sought comment in the proposal on whether rangeland should be included as agricultural land under RFS2. Rangeland is land on which the indigenous or introduced vegetation is predominantly grasses, grass-like plants, forbs or shrubs and which—unlike cropland or pastureland—is predominantly managed as a natural ecosystem. EPA received a number of comments concerning whether rangeland should be included in the definition of existing agricultural land under RFS2. Some commenters urged EPA to expand the definition of existing agricultural land to include rangeland, arguing that rangelands could serve as important sources of renewable fuel feedstocks. Many of these commenters argued that, although it is generally less intensively managed than cropland, rangeland is nonetheless actively managed through control of brush or weed species, among other practices. In contrast, other commenters argued against the inclusion of rangeland, contending that the potential conversion of rangeland into cropland for growing renewable biomass would lead to losses of carbon, soil, water quality, and biodiversity.

Under EISA, renewable biomass includes crops and crop residue from agricultural land cleared or cultivated at any time prior to the enactment of EISA that is either "actively managed of fallow" and nonforested. In determining whether rangeland should be considered existing agricultural land under this provision, EPA must decide if rangeland qualifies as "actively managed or fallow." EPA believes that the term "actively managed" is best interpreted by reference to the type of material and practices that this provision addresses—namely crops and residue associated with growing crops. We think it is appropriate to inquire whether the type of management involved in a land type is consistent with that which would occur on land where crops are harvested. Thus, while we acknowledge that some types of rangeland are managed to a certain degree, the level of "active management" that is typically associated with land dedicated to growing agricultural crops is far more intensive than the types of management associated with rangeland. For example, rangeland is rarely tilled, fertilized or irrigated as croplands and, to a lesser degree, pasturelands, are. Furthermore, since rangeland encompasses a wide variety of ecosystems, including native grasslands or shrublands, savannas, wetlands, deserts and tundra, including it in the definition of agricultural land would increase the risk that these sensitive ecosystems would become available under EISA for conversion into intensively managed mono-culture cropland. Finally, the conversion of relatively undisturbed rangeland to the production of annual crops could in some cases lead to large releases of GHGs stored in the soil, as well as a loss of biodiversity, both of which would be contrary to EISA's stated goals. For these reasons, EPA is not including rangeland in the definition of "existing agricultural land" in today's final rule.

We proposed to include in our definition of existing agricultural land the requirement that the land was cleared or cultivated prior to December 19, 2007, and that, since December 19, 2007, it has been continuously actively managed (as agricultural land) or fallow, and nonforested. We proposed to interpret the phrase "that is actively managed or fallow, and nonforested" as meaning that land must have been actively managed or fallow, and nonforested, on December 19, 2007, and continuously thereafter in order to qualify for renewable biomass production. We received extensive comments on this interpretation. Many commenters suggested an interpretation of the requirement that agricultural land be "actively managed" to mean that the land had to be "actively managed" at the time EISA was passed on December 17, 2007, such that the amount of land available for biofuel feedstock production was established at that point

and would not diminish over time. Other commenters supported our proposed interpretation, which would mean that the amount of land available for biofuel feedstock production could diminish over time if parcels of land cease to be actively managed at any point, thus taking them out of contention for biofuel feedstock cultivation. Some commenters argued that this interpretation is contrary to Congress' intent and the basic premise of the RFS program since, over time, it could lead to a reduction in the amount of renewable biomass available for use as renewable fuel feedstocks, while the statutorily required volumes of renewable fuel increase over time. These commenters further argue that the active management provision should be interpreted as a "snapshot" of agricultural land existing and actively managed on December 19, 2007. Under this interpretation, the land that was cleared or cultivated prior to December 19, 2007 and was actively managed on that date, would be eligible for renewable biomass production indefinitely.

We agree that the goal of the EISA and RFS program, to increase the presence of renewable fuels in transportation fuel, will be better served by interpreting the "actively managed or fallow" requirement in the renewable biomass definition as applying to land actively managed or fallow on December 19, 2007, rather than interpreting this requirement as applying beginning on December 19, 2007 and continuously thereafter. In addition, by simplifying the requirement in this fashion, there will be significantly less burden on regulated parties in ensuring that their feedstocks come from qualifying lands. For these reasons, we are modifying the definition of existing agricultural land so that the "active management" requirement is satisfied for those that were cleared or cultivated and actively managed or fallow, and non-forested on December 19, 2007.

Further, we proposed and are finalizing that "actively managed" means managed for a predetermined outcome as evidenced by any of the following: Sales records for planted crops, crop residue, or livestock; purchasing records for land treatments such as fertilizer, weed control, or reseeding; a written management plan for agricultural purposes; documentation of participation in an agricultural program sponsored by a Federal, state or local government agency; or documentation of land management in accordance with an agricultural certification program. While we received comments indicating that including a definitive checklist of required evidential records would be helpful to have explicitly identified in the regulations, we are not doing so in order to maintain flexibility, as feedstock producers may vary in the types of evidence they can readily obtain to show that their agricultural land was actively managed. We are adding, however, a clarification that the records must be traceable to the land in question. For example, it will not be sufficient to have a receipt for seed purchase if there is not additional evidence indicating that the seed was applied to the land which is claimed as existing agricultural land.

The term "fallow" is generally used to describe cultivated land taken out of production for a finite period of time. We proposed and sought comment on defining fallow to mean agricultural land that is intentionally left idle to regenerate for future agricultural purposes, with no seeding or planting, harvesting, mowing, or treatment during the fallow period. We also proposed and sought comment on requiring documentation of such intent. We received many comments that supported our proposed definition of fallow. We also received comments indicating that EPA should set a time limit for land to qualify as fallow (as opposed to abandoned for agricultural purposes). We have decided not to include a time limit for land to qualify as "fallow" because we understand that agricultural land may be left fallow for many different purposes and for varying amounts of time. Any particular timeframe that EPA might choose for this purpose would be somewhat arbitrary. Further, EISA does not indicate a time limit on the period of time that qualifying land could be fallow, so EPA does not believe that it would be appropriate to do so in its regulations. Therefore, EPA is finalizing its proposed definition of "fallow."

Finally, in order to define the term "nonforested" as used in the definition of "existing agricultural land," we proposed first to define the term "forestland" as generally undeveloped land covering a minimum area of one acre upon which the predominant vegetative cover is trees, including land that formerly had such tree cover and that will be regenerated. We also proposed that forestland would not include tree plantations. "Nonforested" land under our proposal would be land that is not forestland.

We received many comments on our proposed definition of forestland. Some commenters urged EPA to broaden the definition of "forestland" to include tree plantations, arguing that plantations are well-accepted as a subset of forestland. Others advocated that EPA should make every effort to distinguish between tree plantations and forestland so as not to run the risk of allowing native forests to be converted into less diverse tree plantations from which trees could be harvested for renewable fuel production. For today's final rule, EPA is including tree plantations as a subset of forestland since it is commonly understood as such throughout the forestry industry. Under EISA, renewable biomass may include "slash and pre-commercial thinnings" from non-federal forestlands, and "planted trees and tree residue" from actively managed tree plantations on non-federal land. One effect under EISA of the modification from the proposed rule to include tree plantations as a subset of forestland is to allow pre-commercial thinnings and slash, in addition to planted trees and tree residue, harvested from tree plantations to serve as qualifying feedstocks for renewable fuel production. EPA believes it is appropriate to include pre-commercial thinnings and slash from actively managed tree plantations as renewable biomass, consistent with the EISA provision allowing harvested trees and tree residue from tree plantations to qualify as renewable biomass. Another effect of including the tree plantations as a kind of forestland is that, since crops and crop residue must come from land that was "non-forested" as of the date of EISA enactment, a tract of land managed as a tree plantation on the date of EISA enactment could not be converted to cropland for the production of feedstock for RIN-generating renewable fuel. EPA believes that this result in keeping with Congressional desire to avoid the conversion of new lands to crop production for renewable fuel production.

Additionally, EPA received comments indicating that, in order to be consistent with existing statutory and/or regulatory definitions of "forestland," EPA should exclude tree covered areas in intensive agricultural crop production settings, such as fruit orchards, or tree-covered areas in urban settings such as city parks from the definition of forestland. EPA agrees that these types of land cannot be characterized as "forestland," and is thus excluding them from the definition. EPA's final definition of forestland is "generally undeveloped land covering a minimum of 1 acre upon which the primary vegetative species is trees, including land that formerly had such tree cover and that will be regenerated and tree plantations.

Tree covered areas in intensive agricultural crop production settings, such as fruit orchards, or tree-covered areas in urban settings such as city parks, are not considered forestland."

ii. Planted Trees and Tree Residue

The definition of renewable biomass in EISA includes planted trees and tree residue from actively managed tree plantations on non-federal land cleared at any time prior to December 19, 2007, including land belonging to an Indian tribe or an Indian individual, that is held in trust by the United States or subject to a restriction against alienation imposed by the United States.

We proposed to define the term "planted trees" to include not only trees that were established by human intervention such as planting saplings and artificial seeding, but also trees established from natural seeding by mature trees left undisturbed for such a purpose. Some commenters disagreed with our inclusion of naturally seeded trees in our definition of "planted trees." They argue that an area which is managed for natural regeneration of trees is more akin to a natural forest than a tree plantation, and that the difference between the two types of land should be clear in order to distinguish between the two and to avoid the effective conversion of natural forests to tree plantations under EISA. EPA agrees that the inclusion of natural reseeding in the definition of "planted trees" would make distinguishing between tree plantations and forests difficult or impossible, thus negating the separate restrictions that Congress placed on the two types of land. On the other hand, EPA believes that trees that are naturally seeded and grown together with hand- or machine-planted trees in a tree plantation should not categorically be excluded from qualifying as renewable biomass. Such natural reseeding may occur after planting the majority of trees in a tree plantation, and may be consistent with the management plan for a tree plantation. EPA has decided, therefore, to modify its proposed definition of "planted tree" to be trees harvested from a tree plantation. The term "tree plantation" is defined as a stand of no less than 1 acre composed primarily of trees established by hand- or machine-planting of a seed or sapling, or by coppice growth from the stump or root of a tree that was hand- or machine-planted." The net effect is that as long as a tree plantation consists "primarily" of trees that were hand- or machine planted (or derived therefrom, as described below), then all trees from the tree plantation, including those established from natural seeding by mature trees left undisturbed for such a purpose, will qualify as renewable biomass.

We also received a number of comments suggesting that EPA broaden the definition of planted trees to include other methods of tree regeneration, such as coppice (the production of new stems from stumps or roots), that are frequently used in the forestry industry to regenerate tree plantations. EPA believes that "planted" implies direct human intervention, and that allowing stump-growth from the stump or roots of a tree that was hand- or machine-planted is consistent with this concept. Therefore, today's final rule broadens the concept of "planted trees" from a tree plantation to include "a tree established by hand- or machine-planting of a seed or sapling, or by coppice growth from the stump or root of a tree that was hand- or machine-planted." This new language will appear in the definition of "tree plantation."

In the NPRM, we proposed to define a "tree plantation" as a stand of no fewer than 100 planted trees of similar age and comprising one or two tree species, or an area managed for growth of such trees covering a minimum of one acre. We received numerous comments on our definition of tree plantation. Several commenters urged EPA to define tree plantation more broadly by using the definition from the Dictionary of Forestry—"a stand composed primarily of trees established by planting or artificial seeding," However, this definition does not provide sufficiently clear guidelines for determining whether a given parcel of land would be considered a tree plantation rather than a natural forest. Since trees are considered renewable biomass under RFS2 only if they are harvested from tree plantations, we believe that our proposed definition was clearer and more easily applied in the field. Accordingly, EPA has not adopted the definition of this term from the Dictionary of Forestry. Other commenters argued that there is no technical justification for limiting the number of species or number of trees in a plantation, and that many tree plantations include a variety of species. EPA believes that there is merit in these comments. Accordingly, EPA is finalizing a broadened definition of "tree plantation," by removing the limitations on the number and species of trees. EPA is defining tree plantation as "a stand of no less than 1 acre composed primarily of trees established by hand- or machine-planting of a seed or sapling, or by coppice growth from the stump or root of a tree that was hand- or machine-planted."

We proposed to apply similar management restrictions to tree plantations as would apply to existing agricultural land and also to interpret the EISA language as requiring that to qualify as renewable biomass for renewable fuel production under RFS2, a tree plantation must have been cleared at any time prior to December 19, 2007, and continuously actively managed since December 19, 2007. Consistent with our final position regarding actively managed existing agricultural land, we are defining the term "actively managed" in the context of tree plantations as managed for a predetermined outcome as evidenced by any of the following that must be traceable to the land in question: Sales records for planted trees or slash; purchasing records for seeds, seedlings, or other nursery stock together with other written documentation connecting the land in question to these purchases; a written management plan for silvicultural purposes; documentation of participation in a silvicultural program sponsored by a Federal, state or local government agency; documentation of land management in accordance with an agricultural or silvicultural product certification program; an agreement for land management consultation with a professional forester that identifies the land in question; or evidence of the existence and ongoing maintenance of a road system or other physical infrastructure designed and maintained for logging use, together with one of the above-mentioned documents. Silvicultural programs such as those of the Forest Stewardship Council, the Sustainable Forestry Initiative, the American Tree Farm System, or USDA are examples of the types of programs that could indicate actively managed tree plantations. As with the definition of "actively managed" as it applies to crops from existing agricultural lands, we received extensive comments on this interpretation. As with our final position for crops from existing agricultural lands, we are interpreting the "active management" requirement for tree plantations to apply on the date of EISA's enactment, December 19, 2007. Those tree plantations that were cleared or cultivated and actively managed on December 19, 2007 are eligible for the production of planted trees, tree residue, slash and pre-commercial thinnings for renewable fuel production.

In lieu of the term "tree residue," we proposed to use the term "slash" in our regulations as a more descriptive, but otherwise synonymous, term. According

to the Dictionary of Forestry (1998, p. 168), a source of commonly understood industry definitions, slash is "the residue, *e.g.,* treetops and branches, left on the ground after logging or accumulating as a result of a storm, fire, girdling, or delimbing." We also proposed to clarify that slash can include tree bark and can be the result of any natural disaster, including flooding. We received comments in support of this additional inclusion and are expanding the definition of "slash" to include tree bark and residue resulting from natural disaster, including flooding. We received general support for our proposal to substitute our definition of "slash" for "tree residue," however, several commenters argued that our definition of slash is too narrow to be substituted for "tree residue," which should include woody residues from saw mills and paper mills that process planted trees from tree plantations. EPA agrees that the term "residue" should include this material. Therefore, EPA is expanding the definition of "tree residue" to include residues from processing planted trees at lumber and paper mills, but is limiting it to the biogenically derived portion of the residues that can be traced back to feedstocks meeting the definition of renewable biomass (i.e. planted trees and tree residue from actively managed tree plantations on non-federal land cleared at any time prior to December 19, 2007). RINs may only be generated for the fraction of fuel produced that represents the biogenic portion of the tree residue, using the procedures described in ASTM test method D–6866. Thus, if the tree residues are mixed with chemicals or other materials during processing at the lumber or paper mills, producers may only generate RINs for the portion of the mixture that is actually derived from planted trees. EPA's final definition of "tree residue" is "slash and any woody residue generated during the processing of planted trees from actively managed tree plantations for use in lumber, paper, furniture or other applications, providing that such woody residue is not mixed with similar residue from trees that do not originate in actively managed tree plantations.

iii. Slash and Pre-Commercial Thinnings

The EISA definition of renewable biomass includes slash and pre-commercial thinnings from non-federal forestlands, including forestlands belonging to an Indian tribe or an Indian individual, that are held in trust by the United States or subject to a restriction against alienation imposed by the United States. However, EISA excludes slash and pre-commercial thinnings from forests or forestlands that are ecological communities with a global or State ranking of critically imperiled, imperiled, or rare pursuant to a State Natural Heritage Program, old growth forest, or late successional forest.

As described in Sec. II.B.4.a.i of this preamble, our definition of "forestland" is generally undeveloped land covering a minimum of 1 acre upon which the primary vegetative species is trees, including land that formerly had such tree cover and that will be regenerated and tree plantations. Tree-covered areas in intensive agricultural crop production settings, such as fruit orchards or tree-covered areas in urban setting such as city parks, are not considered forestland. Also as noted in Sec. III.B.4.a.ii of this preamble, we are adopting the definition of slash listed in the Dictionary of Forestry, with the addition of tree bark and residue resulting from natural disaster, including flooding.

As for "pre-commercial thinnings," the Dictionary of Forestry defines the act of such thinning as "the removal of trees not for immediate financial return but to reduce stocking to concentrate growth on the more desirable trees." Because what may now be considered pre-commercial may eventually be saleable as renewable fuel feedstock, we proposed not to include any reference to "financial return" in our definition, but rather to define pre-commercial thinnings as those trees removed from a stand of trees in order to reduce stocking to concentrate growth on more desirable trees. Additionally, we proposed to include diseased trees in the definition of pre-commercial thinnings due to the fact that they can threaten the integrity of an otherwise healthy stand of trees, and their removal can be viewed as reducing stocking to promote the growth of more desirable trees. We sought comment on whether our definition of pre-commercial thinnings should include a maximum diameter and, if so, what the appropriate maximum diameter should be. We received comments on our proposed definition of pre-commercial thinnings that were generally supportive of our proposed definition. Many commenters argued that EPA should not use a maximum tree diameter as a basis for defining pre-commercial thinning as tree diameter varies greatly by forest type and location, making any diameter limitation EPA might set arbitrary. EPA agrees with this assessment. Commenters also argued that pre-commercial thinnings may include other non-tree vegetative material that is removed to promote and improve tree growth. EPA is attempting to utilize standard industry definitions to the extent practicable, and believes that the proposed definition of pre-commercial thinnings, based largely on the Dictionary of Forestry definition with the addition of other vegetative material removed to promote tree growth, is appropriate. Therefore, we are finalizing the proposed definition of "pre-commercial thinnings," with the addition of the phrase "or other vegetative material that is removed to promote tree growth."

We proposed that the State Natural Heritage Programs referred to in EISA are those comprising a network associated with NatureServe, a non-profit conservation and research organization. Individual Natural Heritage Programs collect, analyze, and distribute scientific information about the biological diversity found within their jurisdictions. As part of their activities, these programs survey and apply NatureServe's rankings, such as critically imperiled (S1), imperiled (S2), and rare (S3) to species and ecological communities within their respective borders. NatureServe meanwhile uses data gathered by these Natural Heritage Programs to apply its global rankings, such as critically imperiled (G1), imperiled (G2), or vulnerable (the equivalent of the term "rare," or G3), to species and ecological communities found in multiple States or territories. We proposed and sought comment on prohibiting slash and pre-commercial thinnings from all forest ecological communities with global or State rankings of critically imperiled, imperiled, or vulnerable ("rare" in the case of State rankings) from being used for renewable fuel for which RINs may be generated under RFS2.

We proposed to use data compiled by NatureServe and published in special reports to identify "ecologically sensitive forestland." The reports listed all forest ecological communities in the U.S. with a global ranking of G1, G2, or G3, or with a State ranking of S1, S2, or S3, and included descriptions of the key geographic and biologic attributes of the referenced ecological community. We proposed that the document be incorporated by reference into the definition of renewable biomass in the final RFS2 regulations (and updated as appropriate through notice and comment rulemaking). The document would identify specific ecological communities from which slash and pre-commercial thinnings could not be used as feedstock for the production of renewable fuel that would qualify for RINs under RFS2. Draft versions of the

document containing the global and State rankings were placed in the docket for the proposed rule.

EPA received several comments on our proposed interpretation of EISA's State Natural Heritage Program requirement and the reports listing G1–G3 and S1–S3 ecological communities. Several commenters argued that while EISA authorizes EPA to exclude slash and pre-commercial thinnings from S1–3 and G1 and G2 communities, it does not authorize the exclusion of biomass from G3 communities, which are designated as "vulnerable," not "critically imperiled, imperiled or rare," as EISA requires. The commenters further argue that there is little or no environmental benefit to adding G3 communities to the list of lands unavailable for renewable fuel feedstock production, and that their inclusion limits the availability of forest-derived biomass. EPA agrees with these comments, and has drafted today's final rule so as not to specifically exclude from the definition of renewable biomass slash and pre-commercial thinnings from G3-ranked "vulnerable" ecological communities to qualify as renewable biomass for purposes of RFS2. We are interpreting EISA's language to exclude from the definition of renewable biomass any biomass taken from ecological communities in the U.S. with Natural Heritage Programs global ranking of G1 or G2, or with a State ranking of S1, S2, or S3. We are including in today's rulemaking docket (EPA–HQ–OAR–2005–0161) the list of ecological communities fitting this description.

To complete the definition of "ecologically sensitive forestland," we proposed to include old growth and late successional forestland which is characterized by trees at least 200 years old. We received comments on this proposed definition recommending that EPA not use a single tree age in the define old growth and late-successional forests, as this criterion does not apply to all types of forests. While EPA understands that there are a number of criteria for determining whether a forest is old growth and that the criteria differ depending on the type of forest, for purposes of the RFS2 rule, EPA seeks to use definitive criteria that can be applied by non-professionals. EPA is finalizing the definition of "old growth" as proposed.

iv. Biomass Obtained From Certain Areas at Risk From Wildfire

The EISA definition of renewable biomass includes biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire. We proposed to clarify in the regulations that "biomass" is organic matter that is available on a renewable or recurring basis, and that it must be obtained from within 200 feet of buildings, campgrounds, and other areas regularly occupied by people, or of public infrastructure, such as utility corridors, bridges, and roadways, in areas at risk of wildfire.

Furthermore, we proposed to define "areas at risk of wildfire" as areas located within—or within one mile of—forestland, tree plantations, or any other generally undeveloped tract of land that is at least one acre in size with substantial vegetative cover. We sought comment on two possible implementation alternatives for identifying areas at risk of wildfire. The first proposed alternative would incorporate into our definition of "areas at risk of wildfire" any communities identified as "communities at risk" and covered by a community wildfire protection plan (CWPP). Communities at risk are defined through a process within the document, "Field Guidance—Identifying and Prioritizing Communities at Risk" (National Association of State Foresters, June 2003). CWPPs are developed in accordance with "Preparing a Community Wildfire Protection Plan—A Handbook for Wildland-Urban Interface Communities" (Society of American Foresters, March 2004) and certified by a State Forester or equivalent. We sought comment on incorporating by reference into the final RFS2 regulations a list of "communities at risk" with an approved CWPP. We also sought comment on a second implementation approach, which would incorporate into our definition of "areas at risk of wildfire" any areas identified as wildland urban interface (WUI) land, or land in which houses meet wildland vegetation or are mixed with vegetation. We noted that SILVIS Lab, in the Department of Forest Ecology and Management and the University of Wisconsin, Madison, has, with funding provided by the U.S. Forest Service, mapped WUI lands based on the 2000 Census and the U.S. Geological Survey National Land Cover Data (NLCD), and we sought comment on how best to use this map.

We received comments on the proposal and on the two proposed alternative options for identifying areas at risk of wildfire. A number of commenters argued that EPA should define "areas at risk of wildfire" using an existing definition of WUI from the Healthy Forests Restoration Act (Pub. L. 108–148). Many commenters recommended that EPA include both lands covered by a CWPP as well as lands meeting the Healthy Forests Restoration Act definition of WUI in order to maximize the amount of land available for biomass feedstock and to encourage the removal of hazardous fuel for wildfires. EPA understands that very few communities that might be eligible for a CWPP actually have one in place, due to the numerous administrative steps that must be taken in order to have a CWPP approved, so the option of defining areas at risk of wildfire exclusively by reference to a list of communities with an approved CWPP would be underinclusive of all lands that a professional forester would consider to be at risk of wildfire. Furthermore, EPA believes that the statutory definition of WUI from the Healthy Forests Restoration Act (Pub. L. 108–148) is too vague using directly in implementing the RFS2 program. If EPA used this WUI definition, individual plots of land would have to be assessed by a professional forester on a case-by-case basis in order to determine if they meet the WUI definition, creating an expensive burden for landowners seeking to sell biomass from their lands as renewable fuel feedstocks.

In light of the comments received and the need for a simple way for landowners and renewable fuel producers to track the status of particular plots of land, for the final rule we are identifying "areas at risk of wildfire" as those areas identified as wildland urban interface. Those areas are depicted and mapped at *http://silvis.forest.wisc.edu/Library/WUILibrary.asp*. The electronic WUI map is a readily accessible reference tool that was prepared by experts in the field of identifying areas at risk of wildfire, and is thus an ideal reference for purposes of implementing RFS2. EPA has included in the rulemaking docket instructions on using the WUI map to find the status of a plot of land.

v. Algae

EISA specifies that "algae" qualify as renewable biomass. EPA did not propose a definition for this term. A number of commenters have requested clarification, specifically asking whether cyanobacteria (also known as blue-green algae), diatoms, and angiosperms are within the definition. Technically, the term "algae" has recently been defined as "thallophytes (plants lacking roots, stems and leaves) that have chlorophyll a as their primary photosynthetic pigment and lack a sterile covering of

cells around the reproductive cells."[5] Algae are relatively simple organisms that are virtually ubiquitous, occurring in freshwater, brackish water, saltwater, and terrestrial habitats. When present in water, they may be suspended, or grow attached to various substrates. They range in size from unicellular to among the longest living organisms (e.g. sea kelp). There is some disagreement among scientists as to whether cyanobacteria should be considered bacteria or algae. Some consider them to be bacteria because of their cellular organization and biochemistry. However, others find it more significant that they contain chlorophyll a, which differs from the chlorophyll of bacteria which are photosynthetic, and also because free oxygen is liberated in blue-green algal photosynthesis but not in that of the bacteria.[6] EPA believes that it furthers the purposes of EISA to interpret the term "algae" in EISA broadly to include cyanobacteria, since doing so will make available another possible feedstock for renewable fuel production that will further the energy independence and greenhouse gas reduction objectives of the Act. Further, EPA expects that cyanobacteria used in biofuel production would be cultivated, as opposed to harvested, and therefore that there would be no significant impact from use of cyanobacteria for biofuel production on naturally occurring algal populations. Diatoms are generally considered by the scientific community to be algae,[7] and, consistent with this general scientific consensus, EPA interprets the EISA definition of algae to include them. Microcrop angiosperms, however, do not meet the definition of algae, even if they live in an aquatic habitat, since they are relatively more complex organisms than the algae. A discussion of microcrop angiosperms is included above in the discussion of "planted crops and crop residue."

b. Implementation of Renewable Biomass Requirements

Our proposed approach to the treatment of renewable biomass under RFS2 was intended to define the conditions under which RINs can be generated as well as the conditions under which renewable fuel can be produced or imported without RINs. Our proposed and final approaches to both of these areas are described in more detail below.

[5] *Phycology*, Robert Edward Lee, Cambridge University Press, 2008, page 3.

[6] *See*, generally, *Introduction to the Algae. Structure and Reproduction*, by Harold C. Bold and Michael J. Wynne, Prentice-Hall Inc. 1978, page 31.

[7] *See id.*

i. Ensuring That RINs Are Generated Only for Fuels Made From Renewable Biomass

The effect of adding EISA's definition of renewable biomass to the RFS program is to ensure that renewable fuels are only eligible for the program if made from certain feedstocks, and if some of those feedstocks come from certain types of land. In the context of our regulatory program, this means that RINs could only be generated if it can be established that the feedstock from which the fuel was made meets EISA's definitions of renewable biomass include land restrictions. Otherwise, no RINs could be generated to represent the renewable fuel produced or imported. The EISA language does not distinguish between domestic renewable fuel feedstocks and renewable fuel feedstocks that come from abroad, so our final rule requires similar feedstock affirmation and recordkeeping requirements for both RIN-generating domestic renewable fuel producers and RIN-generating foreign producers or importers.

We acknowledge that incidental contaminants can be introduced into feedstocks during cultivation, transport or processing. It is not EPA's intent that the presence of such contaminants should disqualify the feedstock as renewable biomass. The final regulations therefore stipulate that the term "renewable biomass" includes incidental contaminants related to customary feedstock production and transport that are present in feedstock that otherwise meets the definition if such incidental contaminants are impractical to remove and occur in de minimus levels. By "related to customary feedstock production and transport," we refer to contaminants related to crop production, such as soil or residues related to fertilizer, pesticide and herbicide applications to crops, as well as contaminants related to feedstock transport, such as nylon rope used to bind feedstock materials. It would also include agricultural contaminants introduced to the feedstock during sorting or shipping, such as miscellaneous sorghum grains present in a load of corn kernels. However, contamination is not related to customary feedstock production and transport, so such feedstocks would not qualify, and in particular, any hazardous waste or toxic chemical contaminant in feedstock would disqualify the feedstock as renewable biomass.

ii. Whether RINs Must Be Generated for All Qualifying Renewable Fuel

Under RFS1, virtually all renewable fuel is required to be assigned a RIN by the producer or importer. This requirement was developed and finalized in the RFS1 rulemaking in order to address stakeholder concerns, particularly from obligated parties, that the number of available RINs should reflect the total volume of renewable fuel used in the transportation sector in the U.S. and facilitate program compliance. EISA has dramatically increased the mandated volumes of renewable fuel that obligated parties must ensure are produced and used in the U.S. At the same time, EISA makes it more difficult for renewable fuel producers to demonstrate that they have fuel that qualifies for RIN generation by restricting qualifying renewable fuel to that made from "renewable biomass." The inclusion of such restrictions under RFS2 may mean that, in some situations, a renewable fuel producer would prefer to forgo the benefits of RIN generation to avoid the cost of ensuring that its feedstocks qualify for RIN generation. If a sufficient number of renewable fuel producers acted in this way, it could lead to a situation in which not all qualifying fuel is assigned RINs, thus resulting in a shortage of RINs in the market that could force obligated parties into non-compliance even though biofuels are being produced and used. Another possible outcome would be that the demand for and price of RINs would increase significantly, making compliance by obligated parties more costly and difficult than necessary and raising prices for consumers.

With these concerns in mind, EPA proposed to preserve in RFS2 the RFS1 requirement that RINs be generated for all qualifying renewable fuel. We also proposed that renewable fuel producers maintain records showing that they utilized feedstocks made from renewable biomass if they are generating RINs, or, if they are not generating RINs, that they did not use feedstocks that qualify as renewable biomass. However, we considered this matter further, and we realize that the implication of these proposed requirements is that renewable fuel producers would be caught in the untenable position of being forced to participate in the RFS2 program (register, keep records, etc.) even if they are unable to generate RINS because their feedstocks do not meet the definition of renewable biomass. We received many comments on the proposed requirement to generate RINs for all qualifying renewable fuel. Most

commenters argued that the requirement to keep records for non-qualifying renewable fuels was excessively onerous and served little purpose for the program.

After considering the comments received, EPA has determined that this requirement would be overly burdensome and unreasonable for producers. The burden stems from the requirement that producers prove that their feedstocks do not qualify if they are not generating RINs. If the data did not exist or could not be obtained, producers could not produce the fuel, even if no RINs would be generated. Thus, for the final rule, EPA is requiring only that producers that do generate RINs have the requisite records (as discussed in section II.B.4.c.i. of this preamble) documenting that their fuel is produced from feedstocks meeting the definition of renewable biomass. Non-RIN generating producers need not maintain any paperwork related to their feedstocks and their origins.

Although EPA is not requiring that RINs be generated for all qualifying renewable fuel, EPA is seeking to avoid situations where biofuels are produced, but RINs are not made available to the market for compliance. EPA received comments requesting that we consider a provision in which any volume of renewable fuel for which RINs were not generated would be an obligated volume for that producer, to serve as a disincentive for those producers who might not generate RINs in order to avoid the RFS program requirements. While EPA is not finalizing this provision in today's rule, we may consider a future rulemaking to promulgate a provision such as this if we find that EISA volumes are not being met due to producers declining to generate RINs for their qualifying renewable fuel. We also note that it is ultimately the availability of qualifying renewable fuel, as determined in part by the number of RINs in the marketplace, that will determine the extent to which EPA should issue a waiver of RFS requirements on the basis of inadequate domestic supply. It is in the interest of renewable fuel producers to avoid a situation where a waiver of the EISA volume requirements appears necessary. EPA encourages renewable fuel producers to generate RINs for all fuel that is made from feedstocks meeting the definition of renewable biomass and that meets the GHG emissions reduction thresholds set out in EISA. *Please see* section II.D.6 for additional discussion of this issue.

c. Implementation Approaches for Domestic Renewable Fuel

Consistent with RFS1, renewable fuel producers will be responsible for generating Renewable Identification Numbers (RINs) under RFS2. In order to determine whether or not their fuel is eligible for generating RINs, renewable fuel producers will generally need to have at least basic information about the origin of their feedstocks, to ensure they meet the definition of renewable biomass. In the proposal, EPA described and sought comment on several approaches for implementing the land restrictions on renewable biomass contained in EISA.

The proposed approach for ensuring that producers generate RINs properly was that EPA would require that renewable fuel producers obtain documentation about their feedstocks from their feedstock supplier(s) and take the measures necessary to ensure that they know the source of their feedstocks and can demonstrate to EPA that they fall within the EISA definition of renewable biomass. EPA would require renewable fuel producers who generate RINs to affirm on their renewable fuel production reports that the feedstock used for each renewable fuel batch meets the definition of renewable biomass. EPA would also require renewable fuel producers to maintain sufficient records to support these claims. Specifically, we proposed that renewable fuel producers who use planted crops or crop residue from existing agricultural land, or who use planted trees or slash from actively managed tree plantations, would be required to have copies of their feedstock producers' written records that serve as evidence of land being actively managed (or fallow, in the case of agricultural land) since December 2007, such as sales records for planted crops or trees, livestock, crop residue, or slash; a written management plan for agricultural or silvicultural purposes; or, documentation of participation in an agricultural or silvicultural program sponsored by a Federal, state or local government agency. In the case of all other biomass, we proposed to require renewable fuel producers to have, at a minimum, written records from their feedstock supplier that serve as evidence that the feedstock qualifies as renewable biomass.

We sought comment on this approach generally as well as other methods of verifying renewable fuel producers' claims that feedstocks qualify as renewable biomass. EPA received extensive comments on the proposed approach. Many affected parties argued that the proposed approach would pose an unnecessary recordkeeping burden on both feedstock and renewable fuel producers when, in practice, new lands will not be cleared, at least in the near future, for purposes of growing renewable fuel feedstocks. Commenters argued that individual recordkeeping was onerous, when compliance with the renewable biomass requirements could be determined through the use of existing data and third-party programs. Commenters contend that the recordkeeping and feedstock tracking requirements are particularly arduous for corn, soybeans and other agricultural crops that are used as renewable fuel feedstocks due to both the maturity and the highly fungible nature of those feedstock systems. In contrast, other commenters argued that recordkeeping and reporting requirements are necessary to ensure that feedstocks are properly verified as renewable biomass to prevent undesirable impacts on natural ecosystems and wildlife habitat globally.

We also sought comment on the possible use under EISA of non-governmental, third-party verification programs used for certifying and tracking agricultural and forest products from point of origin to point of use both within the U.S. and outside the U.S. We examined third-party organizations that certify specific types of biomass from croplands and organizations that certify forest lands, including the Roundtable on Sustainable Palm Oil, the Basel Criteria for Responsible Soy Production, the Roundtable on Sustainable Biofuels (RSB) and the Better Sugarcane Initiative (BSI). Additionally, we examined the work of the international Soy Working Group, the Brazilian Association of Vegetable Oil Industries (ABIOVE) and Brazil's National Association of Grain Exporters (ANEC), Greenpeace, Verified Sustainable Ethanol initiative, the Sustainable Agriculture Network (SAN), the Forest Stewardship Council (FSC), American Tree Farm program and Sustainable Forestry Initiative (SFI). We proposed not to solely rely on any existing third-party verification program to implement the land restrictions on renewable biomass under RFS2 for several reasons. These programs are limited in the scope of products they certify, the acreage of land certified through third parties in the U.S. covers only a small portion of the total available land estimated to qualify for renewable biomass production under the EISA definition, and none of the existing third-party systems had definitions or criteria that perfectly match the land use definitions

and restrictions contained in the EISA definition of renewable biomass.

We received several comments indicating that producers would like to use evidence of their participation in these types of programs to prove that their feedstocks meet the definition of renewable biomass. Others argued that while, at this time, the requirements of third-party programs may not encompass all of the restrictions and requirements of EISA's renewable biomass definition, the programs may alter their criteria in the future to parallel EISA's requirements. EPA agrees that this is a possibility and, in the future, will consider the use of these programs in order to simplify compliance with the renewable biomass requirements. We encourage fuel producers to work to identify changes to such programs that could allow them to be used as a viable compliance option.

In the proposal, EPA also acknowledged that land restrictions contained within the definition of renewable biomass may not, in practice, result in a significant change in agricultural practices, since biomass from nonqualifying lands may still be used for non-fuel (*e.g.,* food) purposes. Therefore, we sought comment on a stakeholder suggestion to establish a baseline level of production of biomass feedstocks such that reporting and recordkeeping requirements would be triggered only when the baseline production levels of feedstocks used for biofuels were exceeded. Additionally, EPA offered as an alternative the use of existing satellite and aerial imagery and mapping software and tools to implement the renewable biomass provisions of EISA. We received numerous comments in support of these options. Commenters argued that USDA collects and maintains ample data on land use that EPA could use to demonstrate that, due to increasing crop yields and other considerations, agricultural land acreage will not expand, at least in the near term, to accommodate the increased renewable fuel obligations of RFS2.

EPA also sought comment on an additional alternative in which EPA would require renewable fuel producers to set up and administer a company-wide quality assurance program that would create an additional level of rigor in the implementation scheme for the EISA land restrictions on renewable biomass. EPA is not finalizing this company-wide quality assurance program approach, but rather, is encouraging the option for an industry-wide quality assurance program, as described in the following section, to be administered.

i. Recordkeeping and Reporting for Feedstocks

After considering the comments we received on the proposed approach, EPA is finalizing reporting and recordkeeping requirements comparable to those in the approach we discussed in the proposed rule for all categories of renewable biomass, with the exception of planted crops and crop residue from agricultural land in the United States, which will be covered by the aggregate compliance approach discussed below in Section II.B.4.c.iii. EPA believes that these requirements on the fuel producer utilizing feedstocks other than crops and crop residue are necessary to ensure that the definition of renewable biomass is being met, and to allow feedstocks to be traced from their original producer to the renewable fuel production facility. Furthermore, we believe that, in most cases, feedstock producers will already have or will be able to easily generate the specified documentation for renewable fuel producers necessary to provide them with adequate assurance that the feedstock in question meets the definition of renewable biomass.

Under today's rule, all renewable fuel producers must maintain written records from their feedstock suppliers for each feedstock purchase that identify the type and amount of feedstocks and where the feedstock was produced and that are sufficient to verify that the feedstock qualifies as renewable biomass. Specifically, renewable fuel producers must maintain maps and/or electronic data identifying the boundaries of the land where the feedstock was produced, product transfer documents (PTDs) or bills of lading tracing the feedstock from that land to the renewable fuel production facility, and other written records that serve as evidence that the feedstock qualifies as renewable biomass. We believe the maps or electronic data can be easily generated using existing Web-based information.

Producers using planted trees and tree residue from tree plantations must maintain additional documentation that serves as evidence that the tree plantation was cleared prior to December 19, 2007, and actively managed as a tree plantation on December 19, 2007. This documentation must consist of the following types of records which must be traceable to the land in question: Sales records for planted trees or slash; purchasing records for fertilizer, weed control, or reseeding, including seeds, seedlings, or other nursery stock together with other written documentation connecting the land in question to these purchases; a written management plan for silvicultural purposes; documentation of participation in a silvicultural program sponsored by a Federal, state or local government agency; or documentation of land management in accordance with a silvicultural product certification program; an agreement for land management consultation with a professional forester that identifies the land in question; or evidence of the existence and ongoing maintenance of a road system or other physical infrastructure designed and maintained for logging use. There are many existing programs, such as those administered by USDA and independent third-party certifiers, that could be used as documentation that verifies that feedstock from certain land qualifies as renewable biomass. For example, many tree plantation owners already participate in a third-party certification program such as FSC or SFI. Written proof of participation by a tract of land in a program of this type on December 19, 2007 would be sufficient to show that a tree plantation was cleared prior to that date and that it was actively managed on that date. The tree plantation owner would need to send copies of this documentation to the renewable fuel producer when supplying them with biomass that will be used as a renewable fuel feedstock.

We anticipate that the recordkeeping requirements will result in renewable fuel producers amending their contracts and modifying their supply chain interactions to satisfy the requirement that producers have documented assurance and proof about their feedstock's origins. Enforcement will rely in part on EPA's review of renewable fuel production reports and attest engagements of renewable fuel producers' records. EPA will also consult other data sources, including any data made available by USDA, and may conduct site visits or inspections of feedstock producers' and suppliers' facilities.

The reporting requirements for renewable biomass in today's final rule include, as proposed, include an affirmation by the renewable fuel producer for each batch of renewable fuel for which they generate RINs that the feedstocks used to produce the batch meet the definition of renewable biomass. Additionally, the final reporting requirements include a quarterly report to be sent to EPA by each renewable fuel producer that includes a summary of the types and volumes of feedstocks used throughout the quarter, as well as electronic data or maps identifying the land from which those feedstocks were harvested.

Producers need not provide duplicate maps if purchasing feedstocks multiple times from one plot of land; producers may cross-reference the previously submitted map. Producers will also be required to keep records tracing the feedstocks from the land to the renewable fuel production facility, other written records from their feedstock suppliers that serve as evidence that the feedstock qualifies as renewable biomass, and for producers using planted trees or tree residue from tree plantations, written records that serve as evidence that the land from which the feedstocks were obtained was cleared prior to December 19, 2007 and actively managed on that date. These requirements will apply to renewable fuel producers using feedstocks from foreign sources (unless special approvals are granted in the future, as described below), or from domestic sources, except for planted crops or crop residue (discussed below).

This approach will be integrated into the existing registration, recordkeeping, reporting, and attest engagement procedures for renewable fuel producers. It places the burden of implementation and enforcement on renewable fuel producers rather than bringing feedstock producers and suppliers directly under EPA regulation, minimizing the number of regulated parties under RFS2.

EPA also sought comment on, and is finalizing as an option, an alternative approach in which EPA allows renewable fuel producers and renewable fuel feedstock producers and suppliers to develop a quality assurance program for the renewable fuel production supply chain, similar to the model of the successful Reformulated Gasoline Survey Association. While individual renewable fuel producers may still choose to comply with the individual renewable biomass recordkeeping and reporting requirements rather than participate in a quality assurance program, we believe that this preferred alternative could be less costly than an individual compliance demonstration, and it would add a quality assurance element to RFS2. Those participating renewable fuel producers would be presumed to be in compliance with the renewable biomass requirements unless and until the quality assurance program finds evidence to the contrary. Under today's rule, renewable fuel producers must choose either to comply with the individual renewable biomass recordkeeping and reporting described above, or they must participate in the quality assurance program.

The quality assurance program must be carried out by an independent auditor funded by renewable fuel producers and feedstock suppliers. The program must consist of a verification program for participating renewable fuel producers and renewable feedstock producers and handlers designed to provide independent oversight of the feedstock handling processes that are required to determine if a feedstock meets the definition of renewable biomass. Under this option, a participating renewable fuel producer and its renewable feedstock suppliers and handlers would have to participate in the funding of an organization which arranges to have an independent auditor conduct a program of compliance surveys. The compliance audit must be carried out by an independent auditor pursuant to a detailed survey plan submitted to EPA for approval by November 1 of the year preceding the year in which the alternative compliance program would be implemented. The compliance survey program plan must include a statistically supportable methodology for the survey, the locations of the surveys, the frequency of audits to be included in the survey, and any other elements that EPA determines are necessary to achieve the same level of quality assurance as the individual recordkeeping and reporting requirements included in the RFS2 regulations.

Under this alternative compliance program, the independent auditor would be required to visit participating renewable feedstock producers and suppliers to determine if the biomass they supply to renewable fuel producers meets the definition of renewable biomass. This program would be designed to ensure representative coverage of participating renewable feedstock producers and suppliers. The auditor would generate and report the results of the surveys to EPA each calendar quarter. In addition, where the survey finds improper designations or handling, the renewable fuel producers would be responsible for identifying and addressing the root cause of the problem. The renewable fuel producers would have to take corrective action to retire the appropriate number of invalid RINs depending on the violation. EPA received comments from a number of parties who were supportive of this option as an alternative and less-burdensome way of ensuring that renewable fuel feedstocks meet the definition of renewable biomass. EPA believes this option to be an efficient and effective means of implementing and enforcing the renewable biomass requirements of EISA, and has therefore included it as a compliance option in today's final rule.

ii. Approaches for Foreign Producers of Renewable Fuel

The EISA renewable biomass language does not distinguish between domestic renewable fuel and fuel feedstocks and renewable fuel and fuel and feedstocks that come from abroad. EPA proposed that foreign producers of renewable fuel that is exported to the U.S. be required to meet the same compliance obligations as domestic renewable fuel producers, as well as some additional measure, discussed in Section II.C., designed to facilitate EPA enforcement in other countries. These proposed obligations include facility registration and submittal of independent engineering reviews (described in Section II.C below), and reporting, recordkeeping, and attest engagement requirements. The proposal also would have included for foreign producers the same obligations that domestic producers have for verifying that their feedstock meets the definition of renewable biomass, such as certifying on each renewable fuel production report that their renewable fuel feedstock meets the definition of renewable biomass and working with their feedstock suppliers to ensure that they receive and maintain accurate and sufficient documentation in their records to support their claims.

(1) RIN-Generating Importers

EPA proposed to allow importers to generate RINs for renewable fuel they are importing into the U.S. only if the foreign producer of that renewable fuel had not already done so. Under the proposal, in order to generate RINs, importers would need to obtain information from the registered foreign producers concerning the point of origin of their fuel's feedstock and whether it meets the definition of renewable biomass. Therefore, we proposed that in the event that a batch of foreign-produced renewable fuel does not have RINs accompanying it when it arrives at a U.S. port, an importer must obtain documentation that proves that the fuel's feedstock meets the definition of renewable biomass (as described in Section II.B.4.a. of this preamble) from the fuel's producer, who must have registered with the RFS program and conducted a third-party engineering review. With such documentation, the importer could generate RINs prior to introducing the fuel into commerce in the U.S.

We sought comment on this proposed approach and whether and to what extent the approaches for ensuring

compliance with the EISA's land restrictions by foreign renewable fuel producers should differ from the proposed approach for domestic renewable fuel producers. We received comments on the proposed implementation option for importers of foreign renewable fuel. Some argue that the proposed recordkeeping requirements for imported fuel were overly burdensome. On the other hand, others argued that importers, similarly to domestic producers, should be required to obtain information that can serve as evidence that the feedstocks meet the definition of renewable biomass, in order to avoid fraud. Some commenters also argued that importers should be able to generate RINs for fuel imported from foreign producers that are not registered with EPA under the RFS2 program.

For the final rule, EPA is requiring that importers may only generate RINs for renewable fuel if the foreign producer has not already done so. The foreign producers must be registered with EPA under the RFS2 program, and must have conducted an independent engineering review. Furthermore, we are requiring that importers obtain from the foreign producer and maintain in their records written documentation that serves as evidence that the renewable fuel for which they are generating RINs was made from feedstocks meeting the definition of renewable biomass. The foreign producer that originally generated the fuel must ensure that these feedstock records are transferred with each batch of fuel and ultimately reach the RIN-generating importer. A requirement that importers maintain these renewable biomass records is consistent with the renewable biomass recordkeeping requirements imposed on domestic producers of renewable fuel.

(2) RIN-Generating Foreign Producers

Foreign producers that intend to generate RINs would be required to designate renewable fuel intended for export to the U.S. as such, segregate the volume until it reaches the U.S., and post a bond to ensure that penalties can be assessed in the event of a violation, as discussed in Section II.D.2.b. Similarly to domestic producers of renewable fuel, foreign producers must obtain and maintain written documentation from their feedstock providers that can serve as evidence that their feedstocks meet the definition of renewable biomass. Foreign producers may also develop a quality assurance program for their renewable fuel production supply chain, as described above. However, while domestic renewable fuel producers using crops or crop residues may rely on the aggregate compliance approach described below to ensure that their feedstocks are renewable biomass, this approach is not available at this time to foreign renewable fuel producers, as described below.

EPA believes that the renewable biomass recordkeeping provisions are necessary in order for EPA to ensure that RINs are being generated for fuel that meets EISA's definition of renewable fuel. Just as for domestic producers, foreign producers must maintain evidence that the fuel meets the GHG reduction requirements and is made from renewable biomass.

iii. Aggregate Compliance Approach for Planted Crops and Crop Residue From Agricultural Land

In light of the comments received on the proposed renewable biomass recordkeeping requirements and implementation options, EPA sought assistance from USDA in determining whether existing data and data sources might suggest an alternative method for verifying compliance with renewable biomass requirements associated with the use of crops and crop residue for renewable fuel production. Taking into consideration publicly available data on agricultural land available from USDA and USGS as well as expected economic incentives for feedstock producers, EPA has determined that an aggregate compliance approach is appropriate for certain types of renewable biomass, namely planted crops and crop residue from the United States.

Under the aggregate compliance approach, EPA is determining for this rule the total amount of "existing agricultural land" in the U.S. (as defined above in Section II.B.4.a.) at the enactment date of EISA, which is 402 million acres. EPA will monitor total agricultural land annually to determine if national agricultural land acreage increases above this 2007 national aggregate baseline. Feedstocks derived from planted crops and crop residues will be considered to be consistent with the definition of renewable biomass and renewable fuel producers using these feedstocks will not be required to maintain specific renewable biomass records as described below unless and until EPA determines that the 2007 national aggregate baseline is exceeded. If EPA finds that the national aggregate baseline is exceeded, individual recordkeeping and reporting requirements as described below will be triggered for renewable fuel producers using crops and crop residue. We believe that the aggregate approach will fully ensure that the EISA renewable biomass provisions related to crops and crop residue are satisfied, while also easing the burden for certain renewable fuel producers and their feedstock suppliers vis-à-vis verification that their feedstock qualifies as renewable biomass.

As discussed in more detail below, there are five main factors supporting the aggregate compliance approach we are taking for planted crops and crop residue. First, EPA is using data sets that allow us to obtain an appropriately representative estimate of the agricultural lands available under EISA for the production of crops and crop residue as feedstock for renewable fuel production. Second, USDA data indicate an overall trend of agricultural land contraction. These data, together with EPA economic modeling, suggest that 2007 aggregate baseline acreage should be sufficient to support EISA renewable fuel obligations and other foreseeable demands for crop products, at least in the near term, without clearing and cultivating additional land. Third, EPA believes that existing economic factors for feedstock producers favor more efficient utilization practices of existing agricultural land rather than converting non-agricultural lands to crop production. Fourth, if, at any point, EPA finds that the total amount of land in use for the production of crops including crops for grazing and forage is equal or greater than 397 million acres (i.e. within 5 million acres of EPA's established 402 million acre baseline), EPA will conduct further investigations to evaluate whether the presumption built into the aggregate compliance approach remains valid. Lastly, EPA has set up a trigger mechanism that in the event there are more than the baseline amount of acres of cropland, pastureland and CRP land in production, renewable fuel producers will be required to meet the same individual or consortium-based recordkeeping and reporting requirements applicable to RIN-generating renewable fuel producers using other feedstocks. Taken together, these factors give EPA high confidence that the aggregate compliance approach for domestically grown crops and crop residues meets the statutory obligation to ensure feedstock volumes used to meet the renewable fuel requirements also comply with the definition of renewable biomass.

(1) Analysis of Total Agricultural Land in 2007

As described in Section II.B.4.a. above, EPA is defining "existing agricultural land" for purposes of the

EISA land use restrictions on crops and crop residue to include cropland, pastureland and CRP land that was cleared and actively managed or fallow and nonforested on the date of EISA enactment. To determine the aggregate total acreage of existing agricultural land for the aggregate compliance approach on the date of EISA enactment, EPA obtained from USDA data representing total cropland (including fallow cropland), pastureland, and CRP land in 2007 from three independently gathered national land use data sources (discussed in further detail below): The Farm Service Agency (FSA) Crop History Data, the USDA Census of Agriculture (2007), and the satellite-based USDA Crop Data Layer (CDL). In addition, CRP acreage is provided by FSA's annually published "Conservation Reserve Program: Summary and Enrollment Statistics." By definition, the cropland, pastureland, and CRP land included in these data sources for 2007 were cleared or cultivated on the date of EISA enactment (December 19, 2007) and, consistent with the principles set forth in Section II.4.a.i, would be considered "actively managed" or fallow and nonforested on that date. These categories of lands include those from which traditional crops, such as corn, soy, wheat and sorghum, would likely be grown. Therefore quantification of cropland, pastureland, and CRP land from these data sources represents a reasonable assessment of the acreage in the United States that is available under the Act for the production of crops and crop residues that could satisfy the definition of renewable biomass in EISA.

Conservation Reserve Program Data. FSA reports CRP enrollment acreage each year in the publication "Conservation Reserve Program: Summary and Enrollment Statistics." The CRP program includes the general CRP, the Conservation Reserve Enhancement Program (CREP), and the Farmable Wetlands Program (FWP). The Wetlands Reserve Program (WRP) and Grasslands Reserve Program (GRP) are not under CRP and are not included in the total agricultural land figure in this rulemaking. The 2007 CRP acreage was 36.7 million acres. This is an exact count of acreage within the CRP program in 2007.

Farm Service Agency Crop History Data. The FSA maintains annual records of field-level land use data for all farms enrolled in FSA programs. Almost all national cropland and pastureland is reported through FSA and recorded in this data set. We used the "Cropland" category to determine total agricultural land. Pastureland is reported by farms under the category "Cropland" as cropland used for grazing and forage under the crop type "mixed forage." Timber land and any grazed native grass was removed from the "Cropland" category, because these land types represent either forestland or rangeland, which are not within the definition of existing agricultural land. CRP lands and other conservation program lands are also reported as cropland. Because GRP and WRP lands are not within the definition of "existing agricultural land" as defined in today's regulations, they were also subtracted from the "Cropland" category total. FSA Crop History Data show that there was 402 million acres of agricultural land, as defined here, in the U.S. in 2007 (*See* Table II.B.4–1).

TABLE II.B.4–1—TOTAL U.S. AGRICULTURAL LAND IN 2007 FROM USDA DATA SOURCES

Land category	FSA crop history data	Agricultural census data
Cropland and Pastureland	365	367
CRP Land	37	37
Total Land	402	404

USDA Census of Agriculture. USDA conducts a full census of the U.S. agricultural sector once every five years. The data are available for the U.S., each of the 50 States, and for each county. The most recent census available is the 2007 Census of Agriculture. For the purpose of this rulemaking, USDA provided EPA total acreage and 95% confidence intervals for the Census category "Total Cropland," which includes the sub-categories "Harvested cropland," "Cropland used only for pasture and grazing," and "Other cropland." WRP and GRP acreage are included in "Other cropland," so, for purposes of this rulemaking, they were subtracted from the sub-category number (see above). The analysis excluded the "Permanent rangeland and pasture" category, as the pasture data cannot be separated from rangeland in this category. Total CRP acreage in 2007 was added to "Total cropland." With these adjustments, the Census of Agriculture showed 404 million acres (95% confidence range 401–406 million acres) of existing agricultural land as defined in today's rule, in the U.S. in 2007 (*See* Table II.B.4–1).

Crop Data Layer. The USDA National Agricultural Statistics Service (NASS) Crop Data Layer (CDL) is a raster, geo-referenced, crop-specific land cover data layer suitable for use in geographic information systems (GIS) analysis. Based on satellite data, the CDL has a ground resolution of 56 meters and was verified using FSA surveys. The CDL covers 21 major agricultural states for 2007 and therefore cannot be used to determine a 2007 national aggregate agricultural land baseline. There will be full coverage of the 48 contiguous states for 2009, and the CDL can be used for analysis validation purposes during monitoring. From 2010 onward, it coverage of the 48 contiguous states will be dependent on available funding. GIS analyses of the CDL will include all cropland and pastureland data for each state. To ensure that non-pasture grasslands are not included in the final sum, all areas of the "Grassland herbaceous" category from the U.S. Geological National Land Cover Data layer (NLCD) that overlap the CDL layers are removed from the total agricultural land number. Producer and user accuracies [8] are available for the CDL crop categories.

Primary Data Source Selection for Aggregate Compliance Approach. EPA has determined that the FSA Crop History Data will be used as the data set on which the total existing agricultural land baseline will be based for the aggregate compliance approach. The FSA Crop History Data is the only complete data set for 2007 that is collected annually, enabling EPA to monitor agricultural land expansion or

[8] "Producer Accuracy" indicates the probability that a groundtruth pixel will be correctly mapped and measures errors of omission; "User Accuracy" indicates the probability that a pixel from the classification actually matches the groundtruth data and measures errors of omission.

contraction from year to year using a consistent data set. The total existing agricultural land value derived from FSA Crop History Data rests within the 95% confidence interval of the 2007 Census of Agriculture and is only 2 million acres less than the Census of Agriculture point estimate. The Census of Agriculture provides slightly fuller coverage than the FSA Crop History Data due to the nature of the data collection; however, given that both data collection systems have consistent and long-standing methodologies, the disparity between the two should remain approximately constant. Therefore, the FSA Crop History Data will provide a consistent data set for analyzing any expansion or contraction of total national agricultural land in the U.S.

During its annual monitoring, EPA will use the FSA Crop History Data and the CDL analyses as a secondary source to validate our annual assessment. In years when the Census of Agriculture is updated, this data will also be used to validate our annual assessment. Other data sources, such as the annual NASS Farms, Land in Farms and Livestock Operations may also be useful as secondary data checks. Lastly, EPA intends to consider, as appropriate, other data sources for the annual monitoring analysis of total agricultural land as new technologies and data sources come online that would improve the accuracy and robustness of annual monitoring.

(2) Aggregate Agricultural Land Trends Over Time

The Census of Agriculture (conducted every five years) shows that U.S. agricultural land has decreased by 44 million acres from 1997 to 2007, indicating an overall decade trend of contraction of agricultural land utilization despite some year-to-year variations that can be seen by reference to the annual FSA Crop History records (*See* Table II.B.4–2 and Table II.B.4–3). EPA's FASOM modeling results, which model full EISA volumes in 2022, support this contraction trend, indicating that total cropland, pastureland, and CRP land in the U.S. in 2022, under a scenario of full renewable fuel volume as required by EISA, would be less than the 2007 national acreage reported in the FSA Crop History Data (*See* preamble Section VII and RIA Chapter 5).

TABLE II.B.4–2—TOTAL AGRICULTURAL LAND (AS DEFINED IN SECTION II.B.4.a) COUNTED IN THE CENSUS OF AGRICULTURE FROM 1997–2007

Census year	Total agricultural land (millions of acres)
2007	404
2002*	431
1997*	445

*2002 data do not include farms with land in FWP or CREP.

TABLE II.B.4–3—TOTAL AGRICULTURAL LAND (AS DEFINED IN SECTION II.B.4.a) RECORDED IN FSA CROP HISTORY DATA FROM 2005–2007

Year	Total agricultural land (millions of acres)
2007	402
2006	393
2005	392

(3) Aggregate Compliance Determination

The foundation of the aggregate compliance approach is establishment of a baseline amount of eligible agricultural land that was cleared or cultivated and actively managed or fallow and non-forested on December 19, 2007. Based on USDA–FSA Crop History Data, EPA is establishing a baseline of 402 million acres of U.S. agricultural land, as defined in Section II.B.4.a and based upon the methods described in Section II.B.4.c.iii.(1), that is eligible for production of planted crops and crop residue meeting the EISA definition of renewable biomass. EPA will monitor total U.S. agricultural land annually, using FSA Crop History Data as a primary determinant, but using other data sources for support (*See* Section II.4.c.iii.(1)). If, at any point, EPA finds that the total land in use for the production of crops, including crops for grazing and forage, is greater than 397 million acres (i.e. within 5 million acres of EPA's established 402 million acre baseline), EPA will conduct further investigations to evaluate whether the presumption built into the aggregate compliance approach remains valid. Additionally, if EPA determines that the data indicates that this 2007 baseline level of eligible agricultural land has been exceeded, EPA will publish in the **Federal Register** a finding to that effect, and additional requirements will be triggered for renewable fuel producers to verify that they are using planted crops and crop residue from "existing agricultural land" as defined in today's rule as their renewable fuel feedstock. EPA's findings will be published by November 30, at the latest. If in November the 402 million acres baseline is found to be exceeded, then on July 1 of the following year, renewable fuel producers using feedstocks qualifying for this aggregate compliance approach, namely planted crops and crop residue from the United States, will be required to comply with the recordkeeping and reporting requirements applicable to producers using other types of renewable biomass, as described in the previous sections. This includes the option that fuel producers could utilize a third-party consortium to demonstrate compliance.

EPA acknowledges that it is possible that under this approach some of the land available under EISA for crop production on the date of EISA enactment could be retired and other land brought into production, without altering the assessment of the aggregate amount of cropland, pastureland and CRP land. Under EISA, crops or crop residues from the new lands would not qualify as renewable biomass. However, EPA expects such shifts in acreage to be de minimus, as long as the total aggregate amount of agricultural land does not exceed the 2007 national aggregate baseline. EPA expects that new lands are unlikely to be cleared for agricultural purposes for two reasons. First, it can be assumed that most undeveloped land that was not used as agricultural land in 2007 is generally not suitable for agricultural purposes and would serve only marginally well for production of renewable fuel feedstocks. Due to the high costs and significant inputs that would be required to make the non-agricultural land suitable for agricultural purposes, it is highly unlikely that farmers will undertake the effort to "shift" land that is currently non-agricultural into agricultural use. Second, crop yields are projected to increase, reducing the need for farmers to clear new land for agricultural purposes. We believe that this effect is reflected in the overall trend, discussed earlier, of an overall contraction in agricultural land acreage over time.

If EPA determines that the baseline is exceeded, and that individual compliance with the renewable biomass reporting and recordkeeping requirements is triggered, renewable fuel producers using crops and crop residue as a feedstock for renewable fuel would become responsible, beginning July 1 of the following year, for meeting individual recordkeeping and reporting requirements related to renewable biomass verification. These requirements are identical to those that

apply to producers using other types of renewable biomass feedstocks, such as planted trees from tree plantations, as described in the previous sections. Renewable fuel producers generating RINs under the RFS2 program would continue to be required to affirm (through EMTS—EPA Moderated Transaction System) for each batch of renewable fuel that their feedstocks meet the definition of renewable biomass. Additionally, producers would send a quarterly report to EPA that includes a summary of the types and volumes of feedstocks used throughout the quarter, as well as electronic data or maps identifying the land from which those feedstocks were harvested.

Furthermore, those RIN-generating renewable fuel producers will be required to obtain and maintain in their files written records from their feedstock suppliers for each feedstock purchase that identify where the feedstocks were produced and that are sufficient to verify that the feedstocks qualify as renewable biomass. This includes maps and/or electronic data identifying the boundaries of the land where the feedstock was produced, PTDs or bills of lading tracing the feedstock from that land to the renewable fuel production facility, and other written records that serve as evidence that the feedstock qualifies as renewable biomass. Finally, producers using planted crops and crop residue must maintain additional documentation that serves as evidence that the agricultural land used to produce the crop or crop residue was cleared or cultivated and actively managed or fallow, and nonforested on December 19, 2007. This documentation must consist of the following types of records which must be traced to the land in question: sales records for planted crops, crop residue, or livestock, purchasing records for land treatments such as fertilizer, weed control, or reseeding or a written agricultural management plan or documentation of participation in an agricultural program sponsored by a Federal, State or local government agency.

Alternatively, if the baseline is exceeded and the requirements are triggered for individual producer verification that their feedstocks are renewable biomass renewable fuel producers may choose to work with other renewable fuel producers as well as feedstock producers and suppliers to develop a quality assurance program for the renewable fuel production supply chain. This quality assurance program would take the place of individual accounting and would consist of an independent third party quality-assurance survey of all participating renewable fuel producers and their feedstock suppliers, completed in accordance with an industry-developed, EPA-approved plan, to ensure that they are utilizing feedstocks that meet the definition of renewable biomass. An in-depth discussion of this industry survey option is included in the previous section.

While the aggregate compliance approach is appropriate for planted crops and crop residues from agricultural land in the United States, due in part to certain additional or different constraints imposed by EISA, the aggregate approach cannot be applied, at this time, to the other types of renewable biomass. Renewable fuel producers utilizing these types of renewable biomass, including planted trees and tree residues from tree plantations, slash and pre-commercial thinnings from non-federal forestland, animal waste, separated yard and food waste, etc., will be subject to the individual reporting and recordkeeping requirements discussed in the previous section.

Additionally, EPA is not finalizing the aggregate compliance approach for foreign producers of renewable fuel. EPA does not, at this time, have sufficient data to make a finding that non-domestically grown crops and crop residues used in renewable fuel production satisfy the definition of renewable biomass. Nevertheless, if, in the future, adequate land use data becomes available to make a finding that, in the aggregate, crops and crop residues used in renewable fuel production in a particular country satisfy the definition of renewable biomass, EPA is willing to consider an aggregate compliance approach for renewable biomass on a country by country basis, in lieu of the individual recordkeeping and reporting requirements.

d. Treatment of Municipal Solid Waste (MSW)

The statutory definition of "renewable biomass" does not include a reference to municipal solid waste (MSW) as did the definition of "cellulosic biomass ethanol" in the Energy Policy Act of 2005 (EPAct), but instead includes "separated yard waste and food waste."

We solicited comment on whether EPA can and should interpret EISA as including MSW that contains yard and/or food waste within the definition of renewable biomass. On the one hand, the reference in the statutory definition to "separated yard waste and food waste," and the lack of reference to other components of MSW (such as waste paper and wood waste) suggests that only yard and food wastes physically separated from other waste materials satisfy the definition of renewable biomass. On the other hand, we noted that EISA does not define the term "separated," and so does not specify the degree of separation required. We also noted that there was some evidence in the Act that Congress did not intend to exclude MSW entirely from the definition of renewable biomass. The definition of "advanced biofuel" includes a list of fuels that are "eligible for consideration" as advanced biofuel, including "ethanol derived from waste material" and biogas "including landfill gas."

As an initial matter, we note that some materials clearly fall within the definition of "separated yard or food waste." The statute itself identifies "recycled cooking and trap grease" as one example of separated food waste. An example of separated yard waste is the leaf waste that many municipalities pick up at curbside and keep separate from other components of MSW for mulching or other uses. However, a large quantity of food and yard waste is disposed of together with other household waste as part of MSW. EPA estimates that about 120 million tons of MSW are disposed of annually much of it inextricably mixed with yard and especially food waste. This material offers a potentially reliable, abundant and inexpensive source of feedstock for renewable fuel production which, if used, could reduce the volume of discarded materials sent to landfills and could help achieve both the GHG emissions reductions and energy independence goals of EISA. Thus, EPA believes we should consider under what conditions yard and food waste that is present in MSW can be deemed sufficiently separated from other materials to qualify as renewable biomass.

One commenter stated that it is clear that MSW does not qualify as renewable biomass under EISA, since the 2005 Energy Policy Act explicitly allowed for qualifying renewable fuel to be made from MSW, and EISA has no mention of it. Commenters from the renewable fuel industry generally favored maximum flexibility for the use of MSW in producing qualifying fuels under EISA, offering a variety of arguments based on the statutory text and reasons why it would benefit the environment and the nation's energy policy to do so. They favored either (1) a determination that unsorted MSW can be used as a feedstock for advanced biofuel even if it does not meet the definition of

renewable biomass, (2) that the Act be interpreted to include MSW as renewable biomass, or (3) that MSW from which varying amounts of recyclable materials have been removed could qualify as renewable biomass. A consortium of ten environmental groups said that for EISA volume mandates to be met, it is important to take advantage of biomass resources from urban wastes that would otherwise be landfilled. They urged that post-recycling residues (*i.e.,* those wastes that are left over at material recovery facilities after separation and recycling) would fit within the letter and spirit of the definition of renewable biomass.

EPA does not believe that the statute can be reasonably interpreted to allow advanced biofuel to be made from material that does not meet the definition of renewable biomass as suggested in the first approach. The definition of advanced biofuel specifies that it is a form of "renewable fuel," and renewable fuel is defined in the statute as fuel that is made from renewable biomass. While the definition of advanced biofuel includes a list of materials that "may" be "eligible for consideration" as advanced biofuel, and that list includes "ethanol derived from waste materials" and biogas "including landfill gas," the fact that the specified items are "eligible for consideration" indicates that they do not necessarily qualify but must meet the definitional requirements—being "renewable fuel" made from renewable biomass and having life cycle greenhouse gas emissions that are at least 50% less than baseline fuel. There is nothing in the statute to suggest that Congress used the term "renewable fuel" in the definition of "advanced biofuel" to have a different meaning than the definition provided in the statute. The result of the commenter's first approach would be that general renewable fuel and cellulosic biofuel would be required to be made from renewable biomass because the definitions of those terms specifically refer to renewable biomass, whereas advanced biofuel and biomass-based diesel would not, because their definitions refer to "renewable fuel" rather than "renewable biomass." EPA can discern no basis for such a distinction. EPA believes that the Act as a whole is best interpreted as requiring all types of qualifying renewable fuels under EISA to be made from renewable biomass. In this manner the land and feedstock restrictions that Congress deemed important in the context of biofuel production apply to all types of renewable fuels.

EPA also does not agree with the commenter who suggested that the listing in the definition of renewable biomass of "biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire" should be interpreted to include MSW. It is clear that the term "at risk of wildfire" modifies the entire sentence, and the purpose of the listing is to make the biomass that is removed in wildfire minimization efforts, such as brush and dead woody material, available for renewable fuel production. Such material does not typically include MSW. Had Congress intended to include MSW in the definition of renewable biomass, EPA believes it would have clearly done so, in a manner similar to the approach taken in EPAct.

EPA also does not believe that it would be reasonable to interpret the reference to "separated yard or food waste" to include unsorted MSW. Although MSW contains yard and food waste, such an approach would not give meaning to the word "separated."

We do believe, however, that yard and food wastes that are part of MSW, and are separated from it, should qualify as renewable biomass. MSW is the logical source from which yard waste and food waste can be separated. As to the degree of separation required, some commenters suggested a simple "post recycling" test be appropriate. They would leave to municipalities and waste handlers a determination of how much waste should be recycled before the residue was used as a feedstock for renewable fuel production. EPA believes that such an approach would not guarantee sufficient "separation" from MSW of materials that are not yard waste or food waste to give meaning to the statutory text. Instead, EPA believes it would be reasonable in the MSW context to interpret the word "separated" in the term "separated yard or food waste" to refer to the degree of separation to the extent that is reasonably practicable. A large amount of material can be, and is, removed from MSW and sold to companies that will recycle the material. EPA believes that the residues remaining after reasonably practicable efforts to remove recyclable materials other than food and yard waste (including paper, cardboard, plastic, textiles, metal and glass) from MSW should qualify as separated yard and food waste. This MSW-derived residue would likely include some amount of residual non-recyclable plastic and rubber of fossil fuel origin, much of it being wrapping and packaging material for food. Since this material cannot be practicably separated from the remaining food and yard waste, EPA believes it is incidental material that is impractical to remove and therefore appropriate to include in the category of separated food and yard waste. In sum, EPA believes that the biogenic portion of the residue remaining after paper, cardboard, plastic, textiles metal and glass have been removed for recycling should qualify as renewable biomass. This interpretation is consistent with the text of the statute, and will promote the productive use of materials that would otherwise be landfilled. It will also further the goals of EISA in promoting energy independence and the reduction of GHG emissions from transportation fuels.

EPA notes there are a variety of recycling methods that can be used, including curbside recycling programs, as well as separation and sorting at a material recovery facility (MRF). For the latter, the sorting could be done by hand or by automated equipment, or by a combination of the two. Sorting by hand is very labor intensive and much slower than using an automated system. In most cases the "by-hand" system produces a slightly cleaner stream, but the high cost of labor usually makes the automated system more cost-effective. Separation via MRFs is generally very efficient and can provide comparable if not better removal of recyclables to that achieved by curbside recycling.

Based on this analysis, today's rule provides that those MSW-derived residues that remain after reasonably practicable separation of recyclable materials other than food and yard waste is renewable biomass. What remains to be addressed is what regulatory mechanisms should be used to ensure the appropriate generation of RINs when separated yard and food waste is used as a feedstock. We are finalizing two methods.

The first method would apply primarily to a small subset of producers who are able to obtain yard and/or food wastes that have been kept separate since waste generation from the MSW waste stream. Examples of such wastes are lawn and leaf waste that have never entered the general MSW waste stream. Typically, such wastes contain incidental amounts of materials such as the plastic twine used to bind twigs together, food wrappers, and other extraneous materials. As with our general approach to the presence of incidental, de minimus contaminants in feedstocks that are unintentionally present and impractical to remove, the presence of such material in separated yard or food waste will not disqualify such wastes as renewable biomass, and the contaminants may be disregarded by producers and importers generating

RINs. (*See* definition of renewable biomass and 80.1426(f)(1).) Waste streams kept separate since generation from MSW that consist of yard waste are expected to be composed almost entirely of woody material or leaves, and therefore will be deemed to be composed of cellulosic materials. Waste streams consisting of food wastes, however, may contain both cellulosic and non-cellulosic materials. For example, a food processing plant may generate both wastes that are primarily starches and sugars (such as carrot and potato peelings, as well as fruits and vegetables that are discarded) as well as corn cobs and other materials that are cellulosic. We will deem waste streams consisting of food waste to be composed entirely of non-cellulosic materials, and qualifying as advanced biofuels, unless the producer demonstrates that some portion of the food waste is cellulosic. The cellulosic portion would then qualify as cellulosic biofuel. The method for quantifying the cellulosic and non-cellulosic portions of the food waste stream is to be described in a written plan which must be submitted to EPA under the registration procedures in 80.1450(b)(vii) for approval and which indicates the location of the facility from which wastes are obtained, how identification and quantification of waste material is to be accomplished, and evidence that the wastes qualify as fully separated yard or food wastes. The producer must also maintain records regarding the source of the feedstock and the amounts obtained.

The second method would involve use as feedstock by a renewable fuel producer of the portion of MSW remaining after reasonably practical separation activities to remove recyclable materials, resulting in a separated MSW-derived residue that qualifies as separated yard and food waste. Today's rule requires that parties that intend to use MSW-derived residue as a feedstock for RIN-generating renewable fuel production ensure that reasonably practical efforts are made to separate recyclable paper, cardboard, textiles, plastics, metal and glass from the MSW, according to a plan that is submitted by the renewable fuel producer and approved by EPA under the registration procedures in 80.1450(b)(viii). In determining whether the plan submittals provide for reasonably practicable separation of recyclables EPA will consider: (1) The extent and nature of recycling that may have occurred prior to receipt of the MSW material by the renewable fuel producer, (2) available recycling technology and practices, and (3) the technology or practices selected by the fuel producer, including an explanation for such selection and reasons why other technologies or practices were not selected. EPA asks that any CBI accompanying a plan or a party's justification for a plan be segregated from the non-CBI portions of the submissions, so as to facilitate disclosure of the non-CBI portion of plan submittals, and approved plans, to interested members of the public.

Producers using this second option, will need to determine what RINs to assign to a fuel that is derived from a variety of materials, including yard waste (largely cellulosic) and food waste (largely starches and sugar), as well as incidental materials remaining after reasonably practical separation efforts such as plastic and rubber of fossil origin. EPA has not yet evaluated the lifecycle greenhouse gas performance of fuel made from such mixed sources of waste, so is unable at this time to assign a D code for such fuel. However, if a producer uses ASTM test method D–6866 on the fuel made from MSW-derived feedstock, it can determine what portion of the rule is of fossil and non-fossil origin. The non-fossil portion of the fuel will likely be largely derived from cellulosic materials (yard waste, textiles, paper, and construction materials), and to a much smaller extent starch-based materials (food wastes). Unfortunately, EPA is not aware of a test method that is able to distinguish between cellulosic- and starch-derived renewable fuel. Under these circumstances, EPA believes that it is appropriate for producers to base RIN assignment on the predominant component and, therefore, to assume that the biogenic portion of their fuel is entirely of cellulosic origin. The non-biogenic portion of the fuel, however, would not qualify for RINs at this time. Thus, in sum, we are providing via the ASTM testing method an opportunity for producers using an MSW-derived feedstock to generate RINs only for the biogenic portion of their renewable fuel. There is no D code for the remaining fossil-derived fraction of the fuel in today's rule nor for the entire volume of renewable fuel produced when using MSW-derived residue as a feedstock. The petition process for assigning such codes in today's rule can be used for such purpose.

Procedures for the use of ASTM Method D–6866 are detailed in 40 CFR 80.1426(f)(9) of today's rule. We solicited comment on this method, and while the context of the discussion of method D–6866 was with respect to using it for gasoline (see 74 FR 24951), the comments we received provided us information on the method itself. Also, commenters were supportive of its use. Fuel producers must either run the ASTM D–6866 method for each batch of fuel produced, or run it on composite samples of the food and yard waste-derived fuel derived from post-recycling MSW residues. Producers will be required at a minimum to take samples of every batch of fuel produced over the course of one month and combine them into a single composite sample. The D–6866 test would then be applied to the composite sample, and the resulting non-fossil derived fraction will be deemed cellulosic biofuel, and applied to all batches of fuel produced in the next month to determine the appropriate number of RINs that must be generated. The producer would be required to recalculate this fraction at least monthly. For the first month, the producer can estimate the non-fossil fraction, and then make a correction as needed in the second month. (The procedure using the ASTM D–6866 method applies not only to the waste-derived fuel discussed here but also to all partially renewable transportation fuels, and is discussed in further detail in Section II.D.4. See also the regulations at § 80.1426(f)(4)).

The procedures for assigning D codes to the fuel produced from such wastes are discussed in further detail in Section II.D.5.

One commenter suggested that biogas from landfills should be treated in the same manner as renewable fuel produced from MSW. EPA agrees with the commenter to a certain extent. The definition of "advanced biofuels" in EISA identifies "Biogas (including landfill gas and sewage waste treatment gas) produced through the conversion of organic matter from renewable biomass" as "eligible for consideration" as an advanced biofuel. However, as with MSW, the statute requires that advanced biofuel be a "renewable fuel" and that such fuel be made from "renewable biomass." The closest reference within the definition of renewable biomass to landfill material is "separated yard or food waste." However, in applying the interpretation of "separated" yard and food waste described above for MSW to landfill material, we come to a different result. Landfill material has by design been put out of practical human reach. It has been disposed of in locations, and in a manner, that is designed to be permanent. For example, modern landfills are placed over impermeable liners and sealed with a permanent cap. In addition, the food and yard waste present in a landfill has over time become intermingled with other

materials to an extraordinary extent. This occurs in the process of waste collection, shipment, and disposal, and subsequently through waste decay, leaching and movement within the landfill. Additionally, we note that the process of biogas formation in a landfill provides some element of separation, in that it is formed only from the biogenic components of landfill material, including but not strictly limited to food and yard waste. Thus, plastics, metal and glass are effectively "separated" out through the process of biogas formation. As a result of the intermixing of wastes, the fact that biogas is formed only from the biogenic portion of landfill material, and the fact that landfill material is as a practical matter inaccessible for further separation, EPA believes that no further practical separation is possible for landfill material and biogas should be considered as produced from separated yard and food waste for purposes of EISA. Therefore, all biogas from landfills is eligible for RIN generation.

We have considered whether to require biogas producers to use ASTM Method D–6866 to identify the biogenic versus non-biogenic fractions of the fuel. However, as noted above, biogas is not formed from non-biogenic compounds in landfills. (Kaplan, *et al.*, 2009) [9] Thus, no purpose would be solved in using the ASTM method in the biogas context.

C. Expanded Registration Process for Producers and Importers

In order to implement and enforce the new restrictions on qualifying renewable fuel under RFS2, we are revising the registration process for renewable fuel producers and importers. Under the RFS1 program, all producers and importers of renewable fuel who produce or import more than 10,000 gallons of fuel annually must register with EPA's fuels program prior to generating RINs. Renewable fuel producer and importer registration under the RFS1 program consists of filling out two forms: 3520–20A (Fuels Programs Company/Entity Registration), which requires basic contact information for the company and basic business activity information and 3520–20B (Gasoline Programs Facility Registration) or 3520–20B1 (Diesel Programs Facility Registration), which require basic contact information for each facility owned by the producer or importer. More detailed information on the renewable fuel production facility, such as production capacity and process, feedstocks, and products was not required for most producers or importers to generate RINs under RFS1 (producers of cellulosic biomass ethanol and waste-derived ethanol are the exception to this).

Additionally, EPA recommends companies register their renewable fuels or fuel additives under title 40 CFR part 79 as a motor vehicle fuel. In fact, renewable fuels intended for use in motor vehicles will be required to be registered under title 40 CFR part 79 prior to any introduction into commerce. Manufacturers and subsequent parties of fuels and fuel additives not registered under part 79 will be liable for separate penalties under 40 CFR parts 79 and 80 in the event their unregistered product is introduced into commerce for use in a motor vehicle. Further if a registered fuel or fuel additive is used in manner that is not consistent with their product's registration under part 79 the manufacturer and subsequent parties will be liable for penalties under parts 79 and 80. If EPA determines based on the company's registration that they are not producing renewable fuel, the company will not be able to generate RINs and the RINs generated for fuel produced from nonrenewable sources will be invalidated.

Due to the revised definitions of renewable fuel under EISA, we proposed to expand the registration process for renewable fuel producers and importers in order to implement the new program effectively. We received a number of comments that opposed the expanded registration as commenters deemed it overly burdensome, costly and unnecessary. However, EPA is finalizing the proposed expanded registration requirements for the following reasons. The information to be collected through the expanded registration process is essential to generating and assigning a certain category of RIN to a volume of fuel. Additionally, the information collected is essential to determining whether the feedstock used to produce the fuel meets the definition of renewable biomass, whether the lifecycle greenhouse gas emissions of the fuel meets a certain GHG reduction threshold and, in some cases, whether the renewable fuel production facility is considered to be grandfathered into the program. Therefore, we are requiring producers, including foreign producers, and importers that generate RINs to provide us with information on their feedstocks, facilities, and products, in order to implement and enforce the program and have confidence that producers and importers are properly categorizing their fuel and generating RINs. The registration procedures will be integrated with the new EPA Moderated Transaction System, discussed in detail in Section III.A of this preamble.

1. Domestic Renewable Fuel Producers

Information on products, feedstocks, and facilities contained in a producer's registration will be used to verify the validity of RINs generated and their proper categorization as either cellulosic biofuel, biomass-based diesel, advanced biofuel, or other renewable fuel. In addition, producers of renewable fuel from facilities that qualify for the exemption from the 20% GHG reduction threshold (as discussed in Section II.B.3) must provide information that demonstrates when the facility commenced construction, and that establishes the baseline volume of the fuel. For those facilities that would qualify as grandfathered but are not in operation we are allowing until May 1, 2013 to submit and receive approval for a complete facility registration. This provision does not require actual fuel production, but simply the filing of registration materials that assert a claim for exempt status. It will benefit both fuel producers, who will likely be able to more readily collect the required information if it is done promptly, and EPA enforcement personnel seeking to verify the information. However, given the potentially significant implications of this requirement for facilities that may qualify for the exemption but miss the registration deadline, the rule also provides that EPA may waive the requirement if it determines that the submission is verifiable to the same extent as a timely-submitted registration.

With respect to products, we are requiring that producers provide information on the types of renewable fuel and co-products that a facility is capable of producing. With respect to feedstocks, we are requiring producers to provide to EPA a list of all the different feedstocks that a renewable fuel producer's facility is likely to use to convert into renewable fuel. With respect to the producer's facilities, two types of information must be reported to the Agency. First, producers must describe each facility's fuel production processes (*e.g.*, wet mill, dry mill, thermochemical, etc.), and thermal/process energy source(s). Second, in order to determine what production volumes would be grandfathered and

[9] Kaplan, *et al.* (2009). "Is it Better to Burn or Bury Waste for Clean Electricity Generation?" *Environmental Science & Technology* 2009 *43*(6), 1711–1717 (Found in Table S1 of supplemental material to the article, at *http://pubs.acs.org/doi/suppl/10.1021/es802395e/suppl_file/es802395e_si_001.pdf*).

thus deemed to be in compliance with the 20% GHG threshold, we are requiring evidence and certification of the facility's qualification under the definition of "commence construction" as well as information necessary to establish its renewable fuel baseline volume per the requirement outlined in Section II.B.3 of this preamble.

EPA proposed to require that renewable fuel producers have a third-party engineering review of their facilities prior to generating RINs under RFS2, and every 3 years thereafter. EPA received comments that the on-site engineering review was overly burdensome, unnecessary and costly. A number of commenters noted that the time allotted for conducting the reviews, between the rule's publication and prior to RIN generation, is not adequate for producers to hire an engineer and conduct the review for all of their facilities. Several commenters requested that on-site licensed engineers be allowed to conduct any necessary facility reviews.

EPA is finalizing the proposed requirement for an on-site engineering review of facilities producing renewable fuel due to the variability of production facilities, the increase in the number of categories of renewable fuels, and the importance of ensuring that RINs are generated in the correct category. Without these engineering reviews, we do not believe it would be possible to implement the RFS2 program in a manner that ensured the requirements of EISA were being fulfilled. Additionally, the engineering review provides a check against fraudulent RIN generation. In order to establish the proper basis for RIN generation, we are requiring that every renewable fuel producer have the on-site engineering review of their facility performed in conjunction with his or her initial registration for the new RFS program. The engineering reviews must be conducted by independent third parties who can maintain impartiality and objectivity in evaluating the facilities and their processes. Additionally, the on-site engineering review must be conducted every three years thereafter to verify that the fuel pathways established in the initial registration are still applicable. These requirements apply unless the renewable fuel producer updates its facility registration information to qualify for a new RIN category (i.e., D code), in which case the review needs to be performed within 60 days of the registration update. Finally, producers are required to submit a copy of their independent engineering review to EPA, for verification and enforcement purposes.

2. Foreign Renewable Fuel Producers

Under RFS1, foreign renewable fuel producers of cellulosic biomass ethanol and waste-derived ethanol may apply to EPA to generate RINs for their own fuel. For RFS2, we proposed that foreign producers of renewable fuel meet the same requirements as domestic producers, including registering information about their feedstocks, facilities, and products, as well as submitting an on-site independent engineering review of their facilities at the time of registration for the program and every three years thereafter. These requirements apply to all foreign renewable fuel producers who plan to export their products to the U.S. as part of the RFS2 program, whether the foreign producer generates RINs for their fuel or an importer does.

Foreign producers, like domestic producers, must also undergo an independent engineering review of their facilities, conducted by an independent third party who is a licensed professional engineer (P.E.), or foreign equivalent who works in the chemical engineering field. The independent third party must provide to EPA documentation of his or her qualifications as part of the engineering review, including proof of appropriate P.E. license or foreign equivalent. The third-party engineering review must be conducted by both foreign producers who plan to generate RINs and those that don't generate RINs but anticipate their fuel will be exported to the United States by an importer who will generate the RINs.

3. Renewable Fuel Importers

We are requiring importers who generate RINs for imported fuel that they receive without RINs may only do so under certain circumstances. If an importer receives fuel without RINs, the importer may only generate RINs for that fuel if they can verify the fuel pathway and that feedstocks use meet the definition of renewable biomass. An importer must rely on his supplier, a foreign renewable fuel producer, to provide documentation to support any claims for their decision to generate RINs. An importer may have an agreement with a foreign renewable fuel producer for the importer to generate RINs if the foreign producer has not done so already. However, the foreign renewable fuel producer must be registered with EPA and must have had a third-party engineering review conducted, as noted above, in order for EPA to be able to verify that the renewable biomass and GHG reduction requirements of EISA are being fulfilled. Section II.D.2.b describes the RIN generating restrictions and requirements for importers under RFS2.

4. Process and Timing

We are making forms for expanded registration for renewable fuel producers and importers, as well as forms for registration of other regulated parties, available electronically with the publication of this final rule. Paper registration forms will only be accepted in exceptional cases. Registration forms must be submitted and accepted by the EPA by July 1, 2010, or 60 days prior to a producer producing or importer importing any renewable fuel, whichever dates come later. If a producer changes its fuel pathway (feedstock, production process, or fuel type) to not listed in his registration information on file with EPA but the change will not incur a change of RIN category for the fuel (i.e., a change in the appropriate D code), the producer must update his registration information within seven (7) days of the change. However, if the fuel producer changes its fuel pathway in a manner that would result in a change in its RIN category (and thus a new D code), such an update would need to be submitted at least 60 days prior to the change, followed by submittal of a complete on-site independent engineering review of the producer's facility also within 60 days of the change. If EPA finds that these deadlines and requirements have not been met, or that a facility's registered profile, dictated by the various parameters for product, process and feedstock, does not reflect actual products produced, processes employed, or feedstocks used, then EPA reserves the right to void, ab initio, any affected RINs generated and may impose significant penalties. For example a newly registered (i.e. not grandfathered) ethanol production facility claims in their registration that they qualify to generate RINs based upon the use of two advanced engineering practices (1) corn oil fractionation and (2) production of wet DGS co-product that is, at a minimum, 35% of its total DGS produced annually. However, during an audit of the producer's records, it is found that of all their DGS produced, less than 15% was wet. In this example, the producer has committed a violation that results in the disqualification of their eligibility to generate RINs; that is, they no longer have an eligible pathway that demonstrates qualification with the 20% GHG threshold requirement for corn ethanol producers. As such any and all RINs produced may be deemed invalid and the producer may be subject to Clean Air Act penalties.

The required independent engineering review as discussed above for domestic and foreign renewable fuel producers is an integral part of the registration process. The agency recognizes, through comments received, that there are significant concerns involving timing necessary and ability to produce a completed engineering review to satisfy registration requirements. Since the publication of the RFS2 NPRM, we have delivered consistently a message stating that advanced planning and preparation was necessary from all parties, EPA and the regulated community inclusive, for successful implementation of this program. In an effort to reduce demand on engineering resources, we are allowing grandfathered facilities an additional six months to submit their engineering review. This will direct the focus of engineering review resources on producers of advanced, cellulosic and biomass based diesel. EPA fully expects these producers of advanced renewable fuels to meet the engineering review requirement; however, if they are having difficulties producing engineer's reports prior to April 1, we ask that they contact us.

D. Generation of RINs

Under RFS2, each RIN will continue to be generated by the producer or importer of the renewable fuel, as in the RFS1 program. In order to determine the number of RINs that must be generated and assigned to a batch of renewable fuel, the actual volume of the batch of renewable fuel must be multiplied by the appropriate Equivalence Value. The producer or importer must also determine the appropriate D code to assign to the RIN to identify which of the four standards the RIN can be used to meet. This section describes these two aspects of the generation of RINs. Other aspects of the generation of RINs, such as the definition of a batch, as well as the assignment of RINs to batches, will remain unchanged from the RFS1 requirements. We received several comments regarding the method for calculating temperature standardization of biodiesel and address this issue in Section III.G.

1. Equivalence Values

For RFS1, we interpreted CAA section 211(o) as allowing us to develop Equivalence Values representing the number of gallons that can be claimed for compliance purposes for every physical gallon of renewable fuel. We described how the use of Equivalence Values adjusted for renewable content and based on energy content in comparison to the energy content of ethanol was consistent with the sections of EPAct that provided extra credit for cellulosic and waste-derived renewable fuels, and the direction that EPA establish "appropriate" credit for biodiesel and renewable fuel volumes in excess of the mandated volumes. We also noted that the use of Equivalence Values based on energy content was an appropriate measure of the extent to which a renewable fuel would replace or reduce the quantity of petroleum or other fossil fuel present in a fuel mixture. EPA stated that these provisions indicated that Congress did not intend to restrict EPA discretion in implementing the program to utilizing a straight volume measurement of gallons. *See* 72 FR 23918–23920, and 71 FR 55570–55571. The result was an Equivalence Value for ethanol of 1.0, for butanol of 1.3, for biodiesel (mono alkyl ester) of 1.5, and for non-ester renewable diesel of 1.7.

In the NPRM we noted that EISA made a number of changes to CAA section 211(o) that impacted our consideration of Equivalence Values in the context of the RFS2 program. For instance, EISA eliminated the 2.5-to-1 credit for cellulosic biomass ethanol and waste-derived ethanol and replaced this provision with large mandated volumes of cellulosic biofuel and advanced biofuels. EISA also expanded the program to include four separate categories of renewable fuel (cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel) and included GHG thresholds in the definitions of each category. Each of these categories of renewable fuel has its own volume requirement, and thus there will exist a guaranteed market for each. As a result of these new requirements, we indicated that there may no longer be a need for additional incentives for certain fuels in the form of Equivalence Values greater than 1.0.

In the NPRM we co-proposed and took comment on two options for Equivalence Values:

1. Equivalence Values would be based on the energy content and renewable content of each renewable fuel in comparison to denatured ethanol, consistent with the approach under RFS1, with the addition that biomass-based diesel standard would be based on energy content in comparison to biodiesel.

2. All liquid renewable fuels would be counted strictly on the basis of their measured volumes, and the Equivalence Values for all renewable fuels would be 1.0 (essentially, Equivalence Values would no longer apply).

In response to the NPRM, some stakeholders pointed to the aforementioned changes brought about by EISA as support for a straight volume approach to Equivalence Values, and argued that it had always been the intent of Congress that the statutory volume mandates be treated as straight volumes. Stakeholders taking this position were generally producers of corn ethanol. However, a broad group of other stakeholders including refiners, biodiesel producers, a broad group of advanced biofuel producers, fuel distributor and States indicated that the first option for an energy-based approach to Equivalence Values was both supported by the statute and necessary to provide for equitable treatment of advanced biofuels. They noted that EISA did not change certain of the statutory provisions EPA looked to for support under RFS1 in establishing Equivalence Values based on relative volumetric energy content in comparison to ethanol. For instance, CAA 211(o) continues to direct EPA to determine an "appropriate" credit for biodiesel, and also directs EPA to determine the "appropriate" amount of credit for renewable fuel use in excess of the required volumes. Had Congress intended to change these provisions they could have easily done so. Moreover, some stakeholders argued that the existence of four standards is not a sufficient reason to eliminate the use of energy-based Equivalence Values for RFS2. The four categories are defined in such a way that a variety of different types of renewable fuel could qualify for each category, such that no single specific type of renewable fuel will have a guaranteed market. For example, the cellulosic biofuel requirement could be met with both cellulosic ethanol or cellulosic diesel. As a result, the existence of four standards under RFS2 does not obviate the value of standardizing for energy content, which provides a level playing field under RFS1 for various types of renewable fuels based on energy content.

Some stakeholders who supported an energy-based approach to Equivalence Values also argued that a straight volume approach would be likely to create a disincentive for the development of new renewable fuels that have a higher energy content than ethanol. For a given mass of feedstock, the volume of renewable fuel that can be produced is roughly inversely proportional to its energy content. For instance, one ton of biomass could be gasified and converted to syngas, which could then be catalytically reformed into either 80 gallons of ethanol (and another 14 gal of other alcohols) or 50

gallons of diesel fuel (and naphtha).[10] If RINs were assigned on a straight volume basis, the producer could maximize the number of RINs he is able to generate and sell by producing ethanol instead of diesel. Thus, even if the market would otherwise lean towards demanding greater volumes of diesel, the greater RIN value for producing ethanol may favor their production instead. However, if the energy-based Equivalence Values were maintained, the producer could assign 1.7 RINs to each gallon of diesel made from biomass in comparison to 1.0 RIN to each gallon of ethanol from biomass, and the total number of RINs generated would be essentially the same for the diesel as it would be for the ethanol. The use of energy-based Equivalence Values could thus provide a level playing field in terms of the RFS program's incentives to produce different types of renewable fuel from the available feedstocks. The market would then be free to choose the most appropriate renewable fuels without any bias imposed by the RFS regulations, and the costs imposed on different types of renewable fuel through the assignment of RINs would be more evenly aligned with the ability of those fuels to power vehicles and engines, and displace fossil fuel-based gasoline or diesel. Since the technologies for producing more energy-dense fuels such as cellulosic diesel are still in the early stages of development, they may benefit from not having to overcome the disincentive in the form of the same Equivalence Value based on straight volume.

Based on our interpretation of EISA as allowing the use of energy-based Equivalence Values, and because we believe it provides a level playing field for the development of different fuels that can displace the use of fossil fuels, and that this approach therefore furthers the energy independence goals of EISA, we are finalizing the energy-based approach to Equivalence Values in today's action. We also note that a large number of companies have already made investments based on the decisions made for RFS1, and using energy-based Equivalence Values will maintain consistency with RFS1 and ease the transition into RFS2. Insofar as renewable fuels with volumetric energy contents higher than ethanol are used, the actual volumes of renewable fuel that are necessary to meet the EISA volume mandates will be smaller than those shown in Table I.A.1–1. The impact on the physical volume will depend on actual volumes of various advanced biofuels produced in the future. The main scenario modeled for this final rule includes a forecast for considerable volumes of relatively high energy diesel fuel made from renewable biomass, and still results in a physical volume mandate of 30.5 billion gallons. The energy-based approach results in the advanced biofuel standard being automatically met during the first few years of the program. For instance, the biomass-based diesel mandated volume for 2010 is 0.65 billion gallons, which will be treated as 0.975 billion gallons (1.5×0.65) in the context of meeting the advanced biofuel standard. Since the mandated volume for advanced biofuel in 2010 is 0.95 billion gallons, this requirement is automatically met by compliance with the biomass-based diesel standard.

Although we are finalizing an energy-based approach to Equivalence Values, we believe that Congress intended the biomass-based diesel volume mandate to be treated as diesel volumes rather than as ethanol-equivalent volumes. Since all RINs are generated based on energy equivalency to ethanol, to accomplish this, we have modified the formula for calculating the standard for biomass-based diesel to compensate such that one physical gallon of biomass-based diesel will count as one gallon for purposes of meeting the biomass-based diesel standard, but will be counted based on their Equivalence Value for purposes of meeting the advanced biofuel and total renewable fuel standards. Since it is likely that the statutory volume mandates were based on projections for biodiesel, we have chosen to use the Equivalence Value for biodiesel, 1.5, in this calculation. See Section II.E.1.a for further discussion. Other diesel fuel made from renewable biomass can also qualify as biomass-based diesel (e.g., renewable diesel, cellulosic diesel). But since the variation in energy content between them is relatively small, variation in the total physical volume of biomass-based diesel will likewise be small.

In the NPRM we also proposed that the energy content of denatured ethanol be changed from the 77,550 Btu/gal value used in the RFS1 program to 77,930 Btu/gal (lower heating value). The revised value was intended to provide a more accurate estimate of the energy content of pure ethanol, 76,400 Btu/gal, rather than the rounded value of 76,000 Btu/gal that was used under RFS1. Except for the Renewable Fuels Association who supported this change, most stakeholders did not comment on this proposal. However, based on new provisions in the Food, Conservation, and Energy Act of 2008, we have since determined that the denaturant content of ethanol should be assumed to be 2% rather than the 5% used in the RFS1 program. This additional change results in a denatured ethanol energy content of 77,000 Btu/gal and a renewable content of denatured ethanol of 97.2%.[11] The value of 77,000 Btu/gal will be used to convert biogas and renewable electricity into volumes of renewable fuel under RFS2. This change also affects the formula for calculating Equivalence Values assigned to renewable fuels. The new formula is shown below:

$EV = (R/0.972) * (EC/77{,}000)$

Where:

EV = Equivalence Value for the renewable fuel, rounded to the nearest tenth.
R = Renewable content of the renewable fuel. This is a measure of the portion of a renewable fuel that came from a renewable source, expressed as a percent, on an energy basis.
EC = Energy content of the renewable fuel, in Btu per gallon (lower heating value).

Under this new formula, Equivalence Values assigned to specific types of renewable fuel under RFS1 will continue unchanged under RFS2. However, non-ester renewable diesel will be required to have a lower energy content of at least 123,500 Btu/gal in order to qualify for an Equivalence Value of 1.7. A non-ester renewable diesel with a lower energy content would be required to apply for a different Equivalent Value according to the provisions in § 80.1415.

2. Fuel Pathways and Assignment of D Codes

As described in Section II.A, RINs under RFS2 would in general continue to have the same number of digits and code definitions as under RFS1. The one change will be that, while the D code will continue to identify the standard to which the RIN can be applied, it will be modified to have four values corresponding to the four different renewable fuel categories defined in EISA. These four D code values and the corresponding categories are shown in Table II.A–1.

In order to generate RINs for renewable fuel that meets the various eligibility requirements (*see* Section II.B), a producer or importer must know which D code to assign to those RINs. Following the approach we described in the NPRM, a producer or importer will determine the appropriate D code using a lookup table in the regulations. The

[10] Another example would be a fermentation process in which one ton of cellulose could be used to produce either 70 gallons of ethanol or 55 gallons of butanol.

[11] Value is lower than 98% because it is based on energy content of denaturant versus ethanol, not relative volume.

lookup table lists various combinations of fuel type, production process, and feedstock, and the producer or importer chooses the appropriate combination representing the fuel he is producing and for which he is generating RINs. Parties generating RINs are required to use the D code specified in the lookup table and are not permitted to use a D code representing a broader renewable fuel category. For example, a party whose fuel qualified as biomass-based diesel could not choose to categorize that fuel as advanced biofuel or general renewable fuel for purposes of RIN generation.[12]

This section describes our approach to the assignment of D codes to RINs for domestic producers, foreign producers, and importers of renewable fuel. Subsequent sections address the generation of RINs in special circumstances, such as when a production facility has multiple applicable combinations of feedstock, fuel type, and production process within a calendar year, production facilities that co-process renewable biomass and fossil fuels, and production facilities for which the lookup table does not provide an applicable D code.

a. Producers

For both domestic and foreign producers of renewable fuel, the lookup table identifies individual fuel "pathways" comprised of unique combinations of the type of renewable fuel being produced, the feedstock used to produce the renewable fuel, and a description of the production process. Each pathway is assigned to one of the D codes on the basis of the revised renewable fuel definitions provided in EISA and our assessment of the GHG lifecycle performance for that pathway. A description of the lifecycle assessment of each fuel pathway and the process we used for determining the associated D code can be found in Section V.

Note that the generation of RINs also requires as a prerequisite that the feedstocks used to make the renewable fuel meet the definition of "renewable biomass" as described in Section II.B.4, including applicable land use restrictions. If a producer is not able to demonstrate that his feedstocks meet the definition of renewable biomass, RINs cannot be generated. However, as noted in Section II.B.4.b.1, feedstocks typically include incidental contaminants. These contaminants may have been intentionally added to promote cultivation (*e.g.*, pesticides, herbicides, fertilizer) or transport (*e.g.*, nylon baling rope). In addition, there may be some incidental contamination of a particular load of feedstocks with co-product during feedstock production, or with other agricultural materials during shipping. For example, there may be incidental corn kernels remaining on some corn cobs used to produce cellulosic biofuel, or some sorghum kernels left in a shipping container that are introduced into a load of corn kernels being shipped to a biofuel production facility. The final regulations clarify that in assigning D codes for renewable fuel, producers and importers should disregard the presence of incidental contaminants in their feedstocks if the incidental contaminants are related to customary feedstock production and transport, and are impractical to remove and occur in de minimus levels.

Through our assessment of the lifecycle GHG impacts of different pathways and the application of the EISA definitions for each of the four categories of renewable fuel, including the GHG thresholds, we have determined that all four categories will have pathways that could be used to meet the Act's volume requirements. For example, ethanol made from corn stover or switchgrass in an enzymatic hydrolysis process will count as cellulosic biofuel. Biodiesel made from waste grease or soybean oil can count as biomass-based diesel. Ethanol made from sugarcane sugar will count as advanced biofuel. Finally, a variety of pathways will count as renewable fuel under the RFS2 program. The complete list of pathways that are valid under our final RFS2 program is discussed in Section V.C and are provided in the regulations at § 80.1426(f).

Producers must choose the appropriate D code from the lookup table in the regulations based on the fuel pathway that describes their facility. The fuel pathway must be specified by the producer in the registration process as described in Section II.C. If there are changes to a producer's facility or feedstock such that their fuel would require a D code that was different from any D code(s) which their existing registration information already allowed, the producer is required to revise its registration information with EPA 30 days prior to changing the applicable D code it uses to generate RINs. Situations in which multiple fuel pathways could apply to a single facility are addressed in Section II.D.3 below.

For producers for whom none of the defined fuel pathways in the lookup table apply, a producer can still generate RINs if he meets the criteria for grandfathered or deemed compliant status as described in Section II.B.3 and his fuel meets the definition of renewable fuel as described in Section II.B.1. In this case he would use a D code of 6 for those RINs generated under the grandfathering or deemed compliant provisions.

A diesel fuel product produced from cellulosic feedstocks that meets the 60% GHG threshold can qualify as either cellulosic biofuel or biomass-based diesel. In the NPRM, we proposed that the producer of such "cellulosic diesel" be required to choose whether to categorize his product as either cellulosic biofuel or biomass-based diesel. However, we requested comment on an alternative approach in which an additional D code would be defined to represent cellulosic diesel allowing the cellulosic diesel RIN to be sold into either market. As described more fully in Section II.A above, we are finalizing this alternative approach in today's final rule. Producers or importers of a fuel that qualifies as both biomass-based diesel and cellulosic biofuel must use a D code of 7 in the RINs they generate, and will thus have the flexibility of marketing such RINs to parties seeking either cellulosic biofuel or biomass-based diesel RINs, depending on market demand. Obligated parties can apply RINs with a D code of 7 to either their cellulosic biofuel or biomass-based diesel RVOs, but not both.

In addition to the above comments, we received comments requesting that the use of biogas as process heat in the production of ethanol, should not be limited to use at the site of renewable fuel production. Specifically, commenters point out that the introduction of gas produced from landfills or animal wastes to fungible pipelines is the only practical manner for most renewable fuel facilities to acquire and use landfill gas, since very few are located adjacent to landfills, or have dedicated pipelines from landfill gas operations to their facilities.[13] The commenters suggested that ethanol plants causing landfill gas to be introduced into a fungible gas pipeline be allowed to claim those volumes. The alternative would be to allow landfill

[12] However, a biomass-based diesel RIN can be used to satisfy Renewable Volume Obligations (RVO) for biomass-based diesel, advanced biofuel, and total renewable fuel. *See* Section II.G.3 for further discussion of the use of RINs for compliance purposes.

[13] This suggestion was also made by several companies with respect to the RFS1 definition of cellulosic biomass ethanol, which allowed corn-based ethanol to be deemed cellulosic if 90% of the fossil fuel used at the ethanol facility to make ethanol was displaced by fuel derived from animal or other waste materials, including landfill gas.

gas that is only used onsite to be counted in establishing the pathway.

We believe that the suggested approach has merit. We agree that it does not make any difference in terms of the beneficial environmental attributes associated with the use of landfill gas whether the displacement of fossil fuel occurs in a fungible natural gas pipeline, or in a specific facility that draws gas volume from that pipeline. In fact, a similar approach is widely used with respect to electricity generated by renewable biomass that is placed into a commercial electricity grid. A party buying the renewable power is credited with doing so in state renewable portfolio programs even though the power from these sources is placed in the fungible grid and the electrons produced by a renewable source may never actually be used by the party purchasing it. In essence these programs assume that the renewable power purchased and introduced into the grid is in fact used by the purchaser, even though all parties acknowledge that use of the actual renewable-derived electrons can never be verified once placed in the fungible grid. We believe that this approach will ultimately further the GHG reduction and energy security goals of RFS2.

Producers may therefore take into account such displacement provided that they demonstrate that a verifiable contractual pathway exists and that such pathway ensures that (1) a specific volume of landfill gas was placed into a commercial pipeline that ultimately serves the transportation fueling facility and (2) that the drawn into this facility from that pipeline matches the volume of landfill gas placed into the pipeline system. Thus facilities using such a fuel pathway may then use an appropriate D code for generation of RINs.

This approach also applies to biogas and electricity made from renewable fuels and which are used for transportation. Producers of such fuel will be able to generate RINs, provided that a contractual pathway exists that provides evidence that specific quantities of the renewable fuel (either biogas or electricity) was purchased and contracted to be delivered to a specific transportation fueling facility.[14] We specify that the pipeline (or transmission line) system must ultimately serve the subject facility. For electricity that is produced by the co-firing of fossil fuels with renewable biomass derived fuels, we are requiring that the resulting electricity is pro-rated to represent only that amount of electricity generated by the qualifying biogas, for the purpose of computing RINs.

We are also providing for those situations in which biogas or renewable electricity is provided directly to the transportation facility, rather than using a commercial distribution system such as pipelines or transmission lines. For both cases—dedicated use and commercial distribution—producers must provide contractual evidence of the production and sale of such fuel, and there are also reporting and recordkeeping requirements to be followed as well.

Presently, there is no D code for electricity that is produced from renewable biomass. The petition process for assigning such codes in today's rule can be used for such purpose.

b. Importers

For imported renewable fuel under RFS2, we are anticipating the importer to be the primary party responsible for generating RINs. However, the foreign producer of renewable fuel can instead elect to generate RINs themselves under certain conditions as described more fully in Section II.D.2.c below. This approach is consistent with the approach under RFS1.

Under RFS1, importers who import more than 10,000 gallons in a calendar year were required to generate RINs for all imported renewable fuel based on its type, except for cases in which the foreign producer generated RINs for cellulosic biomass ethanol or waste-derived ethanol. Due to the new definitions of renewable fuel and renewable biomass in EISA, importers can no longer generate RINs under RFS2 on the basis of fuel type alone. Instead, they must be able to demonstrate that the renewable biomass definition has been met for the renewable fuel they intend to import and for which they will generate RINs. They must also have sufficient information about the feedstock and process used to make the renewable fuel to allow them to identify the appropriate D code from the lookup table for the RINs they generate. Therefore, in order to generate RINs, the importer will be required to obtain this information from a foreign producer. RINs can only be generated if a demonstration is made that the feedstocks used to produce the renewable fuel meet the definition of renewable biomass.

In summary, under today's final rule, importers can import any renewable fuel, but can only generate RINs to represent the imported renewable fuel under the two conditions described below. If these conditions do not apply, the importer can import biofuel but cannot generate RINs to represent that biofuel.

1. The imported renewable fuel is not accompanied by RINs generated by the registered foreign producer

2. The importer obtains from the foreign producer:

—Documentation demonstrating that the renewable biomass definition has been met for the volume of renewable fuel being imported.

—Documentation about the feedstock and production process used to produce the renewable fuel to allow the importer to determine the appropriate D-code designation in the RINs generated.

We are also finalizing additional requirements for foreign producers who either generate RINs or provide documentation to an importer sufficient to allow the importer to generate RINs. As described more fully in the next section, these additional requirements include restrictions on mixing of biofuels in the distribution system as it travels from the foreign producer to the importer.

Finally, EPA is assessing whether additional requirements on foreign-generated fuel may be necessary for situations in which importers are generating RINs for the fuel. Additional requirements may be necessary to ensure that the importers have sufficient information to properly generate the RINs and that EPA has sufficient information to determine whether those RINs have been legitimately generated. EPA will pursue an amendment to the final RFS2 regulations if we find that additional requirements are appropriate and necessary.

c. Additional Provisions for Foreign Producers

In general, we are requiring foreign producers of renewable fuel to meet the same requirements as domestic producers with respect to registration, recordkeeping and reporting, attest engagements, and the transfer of RINs they generate with the batches of renewable fuel that those RINs represent. However, we are also placing additional requirements on foreign producers to ensure that RINs entering the U.S. are valid and that the regulations can be enforced at foreign facilities. These additional requirements are designed to accommodate the more limited access that EPA enforcement personnel have to foreign entities that are regulated parties under RFS2, and also the fact that foreign-produced biofuel intended for export to the U.S. is often mixed with biofuel that will not be exported to the U.S.

[14] Note that biogas used for transportation fuel includes propane made from renewable biomass.

Under RFS1, foreign producers had the option of generating RINs for the renewable fuel that they export to the U.S. if they wanted to designate their fuel as cellulosic biomass ethanol or waste-derived ethanol, and thereby take advantage of the additional 1.5 credit value afforded by the 2.5 Equivalence Value for such products. In order to ensure that EPA had the ability to enforce the regulations relating to the generation of RINs from such foreign ethanol producers, the RFS1 regulations specified additional requirements for them, including posting a bond, admitting EPA enforcement personnel, and submitting to third-party engineering reviews of their production process. For RFS2, we are maintaining these additional requirements for foreign producers because EPA enforcement personnel have the same limitations under RFS2 with regard to access to foreign entities that are regulated parties as they did under RFS1.

EISA also creates other unique challenges in the implementation and enforcement of the renewable fuel standards for foreign-produced renewable fuel imported into the U.S. Unlike our other fuels programs, EPA cannot determine whether a particular shipment of renewable fuel is eligible to generate RINs under the new program by testing the fuel itself. Instead, information regarding the feedstock that was used to produce renewable fuel and the process by which it was produced is vital to determining the proper renewable fuel category and RIN type for the imported fuel under the RFS2 program. Thus, whether foreign producers or importers generate RINs, this information must be collected and maintained by the RIN generator.

If a foreign producer generates RINs for renewable fuel that it produces and exports to the U.S., we are requiring that ethanol must be dewatered and denatured by the foreign producer prior to leaving the production facility and prior to the generation of RINs. This is consistent with our definition of renewable fuel in which ethanol that is valid under RFS2 must be denatured. Moreover, the foreign producer is required to strictly segregate a batch of renewable fuel and its associated RINs from all other volumes of renewable fuel as it travels from the foreign producer to the importer. The strict segregation ensures that RINs entering the U.S. appropriately represent the renewable fuel imported into the U.S. both in terms of renewable fuel type and volume.

Several commenters requested that in general the importer be the RIN generator for imported renewable fuel. Since most imported ethanol is currently made in Brazil and is not denatured by the foreign producer, any RINs generated must be generated by the importer. However, to accomplish this, the importer must obtain the appropriate information from a foreign producer regarding compliance with the renewable biomass definition and a description of the associated pathway for the renewable fuel. Under these circumstances, the foreign producer must ensure that the information is transferred along with the renewable fuel through the distribution system until it reaches the importer. The foreign producer's volume of renewable fuel need not be strictly segregated from other volumes in this case, so long as a volume of chemically indistinguishable renewable fuel is tracked through the distribution system from the foreign producer to the importer, and the information needed by the importer to generate RINs follows this same path through the distribution system. Strict segregation of the volume is not necessary in this case, and the importer will determine appropriate number of RINs for the specific volume and type of renewable fuel that he imports.

Finally, if a foreign producer chooses not to participate in the RFS2 program and thus neither generates RINs nor provides information to the importer so that the importer can generate RINs, the foreign producer can still export biofuel to the U.S. However, under these circumstances the biofuel would not be renewable fuel under RFS2, no RINs could be generated by any party, and thus the foreign producer would not be subject to any of the registration, recordkeeping, reporting, or attest engagement requirements.

3. Facilities With Multiple Applicable Pathways

If a given facility's operations can be fully represented by a single pathway, then a single D code taken from the lookup table will be applicable to all RINs generated for fuel produced at that facility. However, we recognize that this will not always be the case. Some facilities use multiple feedstocks at the same time, or switch between different feedstocks over the course of a year. A facility may be modified to produce the same fuel but with a different process, or may be modified to produce a different type of fuel. Any of these situations could result in multiple pathways being applicable to a facility, and thus there may be more than one applicable D code for various RINs generated at the facility.

If more than one pathway applies to a facility within a compliance period, no special steps will need to be taken if the D code is the same for all the applicable pathways. In this case, all RINs generated at the facility will have the same D code regardless. Such a producer with multiple applicable pathways must still describe its feedstock(s), fuel type(s), and production process(es) in its initial registration and annual report to the Agency so that we can verify that the D code used was appropriate.

However, if more than one pathway applies to a facility within a compliance period and these pathways have been assigned different D codes, then the producer must determine which D codes to use when generating RINs. There are a number of different ways that this could occur. For instance, a producer could change feedstocks, production processes, or the type of fuel he produces in the middle of a compliance period. Or, he could use more than one feedstock or produce more than one fuel type simultaneously. The approach we are finalizing for designating D codes for RINs in these cases follows the approach described in the NPRM and is summarized in Table II.D.3–1.

TABLE II.D.3–1—APPROACH TO ASSIGNING MULTIPLE D CODES FOR MULTIPLE APPLICABLE PATHWAYS

Case/Description	Proposed approach
1. The pathway applicable to a facility changes on a specific date, such that one single pathway applies before the date and another single pathway applies on and after the date.	The applicable D code used in generating RINs must change on the date that the fuel produced changes pathways.
2. One facility produces two or more different types of renewable fuel at the same time.	The volumes of the different types of renewable fuel should be measured separately, with different D codes applied to the separate volumes.

TABLE II.D.3–1—APPROACH TO ASSIGNING MULTIPLE D CODES FOR MULTIPLE APPLICABLE PATHWAYS—Continued

Case/Description	Proposed approach
3. One facility uses two or more different feedstocks at the same time to produce a single type of renewable fuel.	For any given batch of renewable fuel, the producer should assign the applicable D codes using a ratio (explained below) defined by the amount of each type of feedstock used.

Commenters were generally supportive of this approach to multiple applicable pathways, and as a result we are finalizing it with few modifications from the proposal. Further discussion of the comments we received can be found in Section 3.5.4 of the S&A document.

Following our proposal, cases listed in Table II.D.3–1 will be treated as hierarchical, with Case 2 only being used to address a facility's circumstances if Case 1 is not applicable, and Case 3 only being used to address a facility's circumstances if Case 2 is not applicable. This approach covers all likely cases in which multiple applicable pathways may apply to a renewable fuel producer. Some examples of how Case 2 or 3 would apply are provided in the NPRM.

A facility where two or more different types of feedstock are used to produce a single fuel (such as Case 3 in Table II.D.3–1) will be required to generate two or more separate batch-RINs [15] for a single volume of renewable fuel, and these separate batch-RINs will have different D codes. The D codes will be chosen on the basis of the different pathways as defined in the lookup table in § 80.1426(f). The number of gallon-RINs that will be included in each of the batch-RINs will depend on the relative amount of the different types of feedstocks used by the facility. In the NPRM, we proposed to use the relative energy content of the feedstocks to determine how many gallon-RINs should be assigned to each D code. Commenters generally did not address this aspect of our proposal, and we are finalizing it in today's action. Thus, the useable energy content of each feedstock must be used to divide the total number of gallon-RINs generated for a batch of renewable fuel into two or more groups, each corresponding to a different D code. Several separate batch-RINs can then be generated and assigned to the single volume of renewable fuel. The applicable calculations are given in the regulations at § 80.1426(f)(3).

We proposed several elements of the calculation of the useable energy content of the feedstocks, including the following:

1. Only that fraction of a feedstock which is expected to be converted into renewable fuel by the facility can be counted in the calculation, taking into account facility conversion efficiency.
2. The producer of the renewable fuel is required to designate this fraction once each year for the feedstocks processed by his facility during that year, and to include this information as part of his reporting requirements.
3. Each producer is required to designate the energy content (in Btu/lb) once each year of the portion of each of his feedstocks which is converted into fuel. The producer may determine these values for his own feedstocks, or may use default values provided in the regulations at § 80.1426(f)(7).
4. Each producer is required to determine the total mass of each type of feedstock used by the facility on at least a daily basis.

Based on the paucity of comments we received on this issue, we are finalizing the provisions regarding the calculation of useable energy content of the feedstocks as it was proposed in the NPRM. As described in Section II.J, producers of renewable fuel will be required to submit information in their reports on the feedstocks they used, their production processes, and the type of fuel(s) they produced during the compliance period. This will apply to both domestic producers and foreign producers who export any renewable fuel to the U.S. We will use this information to verify that the D codes used in generating RINs were appropriate.

4. Facilities That Co-Process Renewable Biomass and Fossil Fuels

We expect situations to arise in which a producer uses a renewable feedstock simultaneously with a fossil fuel feedstock, producing a single fuel that is only partially renewable. For instance, biomass might be co-fired with coal in a coal-to-liquids (CTL) process that uses Fischer-Tropsch chemistry to make diesel fuel, biomass and waste plastics might be fed simultaneously into a catalytic or gasification process to make diesel fuel, or vegetable oils could be fed to a hydrotreater along with petroleum to produce a diesel fuel. In these cases, the diesel fuel will be only partially renewable. RINs can be generated in such cases, but must be done in such a way that the number of gallon-RINs corresponds only to the renewable portion of the fuel.

Under RFS1, we created a provision to address the co-processing of "renewable crudes" along with petroleum feedstocks to produce a gasoline or diesel fuel that is partially renewable. See 40 CFR 80.1126(d)(6). However, this provision would not apply in cases where either the renewable feedstock or the fossil fuel feedstock is a gas (*e.g.*, biogas, natural gas) or a solid (*e.g.*, biomass, coal). Therefore, we are eliminating the RFS1 provision applicable only to liquid feedstocks and replacing it with a more comprehensive approach that will apply to liquid, solid, or gaseous feedstocks and any type of conversion process. In this final approach, producers are required to use the relative energy content of their renewable and non-renewable feedstocks to determine the renewable fraction of the fuel that they produce. This fraction in turn is used to determine the number of gallon-RINs that should be generated for each batch. Commenters said little about our proposed methodology to use the relative energy content of the feedstocks, and we are therefore finalizing it largely as proposed.

We also requested comment on allowing renewable fuel producers to use an accepted test method to directly measure the fraction of the fuel that is derived from biomass rather than a fossil fuel feedstock. For instance, ASTM D–6866 is a radiocarbon dating test method that can be used to determine the renewable content of transportation fuel. The use of such a test method can be used in lieu of the calculation of the renewable portion of the fuel based on the relative energy content of the renewable biomass and fossil feedstocks. Commenters generally supported the option of using a radiocarbon dating approach. As a result, we believe it would be appropriate and are finalizing a provision to allow parties that co-process renewable biomass and fossil fuels to choose between using the relative energy in the feedstocks or ASTM D–6866 to determine the number of gallon-RINs that should be generated. Regardless of the approach chosen, the

[15] Batch-RINs and gallon-RINs are defined in the regulations at 40 CFR 80.1401.

producer will still need to separately verify that the renewable feedstocks meet the definition of renewable biomass.

If a producer chose to use the energy content of the feedstocks, the calculation would be similar to the treatment of renewable fuels with multiple D codes as described in Section II.D.3 above. As shown in the regulations at § 80.1426(f)(3), the producer would determine the renewable fuel volume that would be assigned RINs based on the amount of energy in the renewable feedstock relative to the amount of energy in the fossil feedstock. Only one batch-RIN would be generated for a single volume of fuel produced from both a renewable feedstock and a fossil feedstock, and this one batch-RIN must be based on the contribution that the renewable feedstock makes to the total volume of fuel. The calculation of the relative energy contents includes factors that take into account the conversion efficiency of the plant, and as a result potentially different reaction rates and byproduct formation for the various feedstocks will be accounted for. The relative energy content of the feedstocks is used to adjust the basic calculation of the number of gallon-RINs downward from that calculated on the basis of batch fuel volume and the applicable Equivalence Value. The D code that must be assigned to the RINs is drawn from the lookup table in the regulations as if the feedstock was entirely renewable biomass. Thus, for instance, a coal-to-liquids plant that co-processes some cellulosic biomass to make diesel fuel would be treated as a plant that produces only cellulosic diesel for purposes of identifying the appropriate D code for the fraction of biofuel that qualifies as renewable fuel under EISA.

If a producer chose to use D–6866, he would be required to either apply this test to every batch, or alternatively to take samples of every batch of fuel he produced over the course of one month and combine them into a single composite sample. The D–6866 test would then be applied to the composite sample, and the resulting renewable fraction would be applied to all batches of fuel produced in the next month to determine the appropriate number of RINs that must be generated. For the first month, the producer can estimate the non-fossil fraction, and then make a correction as needed in the second month. The producer would be required to recalculate the renewable fraction every subsequent month. See the regulations at § 80.1426(f)(9).

5. Facilities That Process Municipal Solid Waste

As described in Section II.B.4.d, only the separated yard and food waste of municipal solid waste (MSW) are considered to be renewable biomass and may be used to produce renewable fuels under the RFS2 program. While renewable fuel producers may produce fuel from all organic components of MSW, they may generate RINs for only that portion of MSW that qualifies as renewable biomass. We are providing two methods for determining the appropriate number of RINs to generate for each batch of fuel, depending on whether the feedstock is pure food and yard waste, or separated municipal solid waste, as described in Section II.B.4.d. While not all biogenic material in the separated MSW is cellulosic, the vast majority of it is likely to be in most situations. Specifically, separated municipal solid waste may contain some non-biogenic materials such as plastics that were unable to be recycled due to market conditions. We are requiring producers of renewable fuel made from separated municipal solid waste to use the radiocarbon dating method D–6866 to calculate the biogenic fraction, presumed to be composed of cellulosic materials. Therefore, unless a renewable fuel producer is using MSW streams that are clearly not cellulosic, we anticipate that a D code of either 3 or 7 will be appropriate for such RINs. *See* the regulations at § 80.1426(f).

6. RINless Biofuel

Under the RFS1 program, all renewable fuel made from renewable feedstocks and used as motor vehicle fuel in the U.S. was assigned RINs. Therefore, aside from the very small amounts of biofuel used in nonroad applications or as heating oil, all renewable fuel produced or imported counted towards the mandated volume goals of the RFS program. Although conventional diesel fuel was not subject to the standards under RFS1, all other motor vehicle fuel fell into two groups: fuel subject to the standards, and fuel for which RINs were generated and was used to meet those standards.

Under RFS2, our approach to compliance with the renewable biomass provision will allow the possibility for some biofuel to be produced without RINs. As described in Section II.B.4 above, we are modifying our approach to compliance with the renewable biomass provision so that renewable fuel producers using feedstocks from domestic planted crops and crop residue will be presumed to meet the renewable biomass provision. Under this "aggregate compliance" approach, these producers will be generating RINs for all their renewable fuel. However, producers who use foreign-grown crops or crop residue or other feedstocks such as planted trees or forestry residues will not be able to take advantage of this aggregate compliance approach. Instead, they will be required to demonstrate that their feedstocks meet the renewable biomass definition, including the associated land use restrictions, before they will be permitted to generate RINs. Absent such a demonstration, these producers can still produce biofuel but will not generate RINs. In addition, fuel producers whose fuel does not qualify as renewable fuel under this program because it does not meet the 20% GHG threshold (and is not grandfathered) can still produce biofuel but will not be allowed to generate RINs. Transportation fuel consumed in the U.S. will therefore be comprised of three groups: fuel subject to the standards (gasoline and diesel), fuel for which RINs are generated and will be used to meet those standards, and RINless biofuel. RINless biofuel will not be covered under any aspect of the RFS2 program, despite the fact that in many cases it will meet the EISA definition of transportation fuel upon blending with gasoline or diesel.

In their comments in response to the NPRM, several refiners suggested that RINless biofuel should be treated as an obligated volume similar to gasoline and diesel, and thus be subject to the standards. Doing so would ensure that all transportation fuels are covered under the RFS2 program, consistent with RFS1. Such an approach would also provide renewable fuel producers with an incentive to demonstrate that their feedstocks meet the renewable biomass definition and thus generate RINs for all the biofuel that they produce. There could be less potential for market manipulation on the part of biofuel producers who might be considering producing RINless biofuel as a means for increasing demand for renewable fuel and RINs.

Nevertheless, we do not believe that it would be appropriate at this time to finalize a requirement that RINless biofuel be considered an obligated fuel subject to the standards. We did not propose such an approach in the NPRM, and as a result many renewable fuel producers who could be affected did not have an opportunity to consider and comment on it. Moreover, the volume of RINless biofuel is likely to be small compared to the volume of renewable fuel with RINs since RINs have value and producers currently have an

incentive to generate them. However, if in the future RIN values should fall—for instance, if crude oil prices rise high enough and the market drives up demand for biofuels—the incentive to demonstrate compliance with the renewable biomass definition may decrease and there may be an increase in the volume of RINless biofuel. Under such circumstances it may be appropriate to reconsider whether RINless biofuel should be designated as an obligated volume subject to the standards.

E. Applicable Standards

The renewable fuel standards are expressed as a volume percentage, and are used by each refiner, blender or importer to determine their renewable fuel volume obligations. The applicable percentages are set so that if each regulated party meets the percentages, then the amount of renewable fuel, cellulosic biofuel, biomass-based diesel, and advanced biofuel used will meet the volumes specified in Table I.A.1–1.[16]

The formulas finalized today for use in deriving annual renewable fuel standards are based in part on an estimate of combined gasoline and diesel volumes, for both highway and nonroad uses, for the year in which the standards will apply. The standards will apply to refiners, blenders, and importers of these fuels. As described more fully in Section II.F.3, other producers of transportation fuel, such as producers of natural gas, propane, and electricity from fossil fuels, are not subject to the standards. Since the standards apply to refiners, blenders and importers of gasoline and diesel, these are also the transportation fuels that are used to determine the annual volume obligations of an individual refiner, blender, or importer.

The projected volumes of gasoline and diesel used to calculate the standards will continue to be provided by EIA's Short-Term Energy Outlook (STEO). The standards applicable to a given calendar year will be published by November 30 of the previous year. Gasoline and diesel volumes will continue to be adjusted to account for the required renewable fuel volumes. In addition, gasoline and diesel volumes produced by small refineries and small refiners will be exempt through 2010, and that year's standard is adjusted accordingly, as discussed below.

As discussed in the proposal, four separate standards are required under the RFS2 program, corresponding to the four separate volume requirements shown in Table I.A.1–1. The specific formulas we use to calculate the renewable fuel standards are described below in Section II.E.1.

In order for an obligated party to demonstrate compliance, the percentage standards are converted into the volume of renewable fuel each obligated party is required to satisfy. This volume of renewable fuel is the volume for which the obligated party is responsible under the RFS program, and continues to be referred to as its Renewable Volume Obligation (RVO). Since there are four separate standards under the RFS2 program, there are likewise four separate RVOs applicable to each obligated party. Each standard applies to the sum of all gasoline and diesel produced or imported. Determination of RVOs is discussed in Section II.G.2.

1. Calculation of Standards

a. How Are the Standards Calculated?

The four separate renewable fuel standards are based primarily on (1) the 49-state[17] gasoline and diesel consumption volumes projected by EIA, and (2) the total volume of renewable fuels required by EISA for the coming year. Table I.A.2–1 shows the required overall volumes of four types of renewable fuel specified in EISA. Each renewable fuel standard is expressed as a volume percentage of combined gasoline and diesel sold or introduced into commerce in the U.S., and is used by each obligated party to determine its renewable volume obligation.

Today we are finalizing an approach to setting standards that is based in part on the sum of all gasoline and diesel produced or imported in the 48 contiguous states and Hawaii. An approach we are not adopting but which we discussed in the proposal would have split the standards between those that would be specific to gasoline and those that would be specific to diesel. Though this approach to setting standards would more readily align the RFS obligations with the relative amounts of gasoline and diesel produced or imported by each obligated party, we are not adopting this approach because it relies on projections of the relative amounts of gasoline-displacing and diesel-displacing renewable fuels. These projections would need to be updated every year, and as stated in the proposal, we believe that such an approach would unnecessarily complicate the program.

While the required amount of total renewable fuel for a given year is provided by EISA, the Act requires EPA to base the standards on an EIA estimate of the amount of gasoline and diesel that will be sold or introduced into commerce for that year. As discussed in the proposal, EIA's STEO will continue to be the source for projected gasoline, and now diesel, consumption estimates. In order to achieve the volumes of renewable fuels specified in EISA, the gasoline and diesel volumes used to determine the standard must be the non-renewable portion of the gasoline and diesel pools. Because the STEO volumes include renewable fuel use, we must subtract the total renewable fuel volume from the total gasoline and diesel volume to get total non-renewable gasoline and diesel volumes. The Act also requires EPA to use EIA estimates of renewable fuel volumes; the best estimation of the coming year's renewable fuel consumption is found in Table 8 (U.S. Renewable Energy Supply and Consumption) of the STEO. Additional information on projected renewable fuel use will be included as it becomes available.

As discussed in Section II.D.1, we are finalizing the energy content approach to Equivalence Values for the cellulosic biofuel, advanced biofuel, and total renewable fuel standards. However, the biomass-based diesel standard is based on the volume of biodiesel. In order to align both of these approaches simultaneously, biodiesel will continue to generate 1.5 RINs per gallon as in RFS1, and the biomass-based diesel volume mandate from EISA is then adjusted upward by the same 1.5 factor. The net result is a biomass-based diesel gallon being worth 1.0 gallons toward the biomass-based diesel standard, but 1.5 gallons toward the other standards.

CAA section 211(o) exempts small refineries[18] from the RFS requirements until the 2011 compliance period. In RFS1, we extended this exemption to the few remaining small refiners not already exempted.[19] Small refineries and small refiners will continue to be exempt from the program until 2011 under the new RFS2 regulations. Thus we have excluded their gasoline and diesel volumes from the overall non-renewable gasoline and diesel volumes used to determine the applicable percentages until 2011. As discussed in

[16] Actual volumes can vary from the amounts required in the statute. For instance, lower volumes may result if the statutorily required volumes are adjusted downward according to the waiver provisions in CAA 211(o)(7)(D). Also, higher or lower volumes may result depending on the actual consumption of gasoline and diesel in comparison to the projected volumes used to set the standards.

[17] Hawaii opted-in to the original RFS program; that opt-in is carried forward to this program.

[18] Under section 211(o) of the Clean Air Act, small refineries are those with 75,000 bbl/day or less average aggregate daily crude oil throughput.

[19] *See* Section III.E.

the proposal, total small refinery and small refiner gasoline production volume is expected to be fairly constant compared to total U.S. transportation fuel production. Thus we estimated small refinery and small refiner gasoline and diesel volumes using a constant percentage of national consumption, as we did in RFS1. Using information from gasoline batch reports submitted to EPA for 2006, EIA data, and input from the California Air Resources Board regarding California small refiners, we estimate that small refinery volumes constitute 11.9% of the gasoline pool, and 15.2% of the diesel pool.

CAA section 211(o) requires that the small refinery adjustment also account for renewable fuels used during the prior year by small refineries that are exempt and do not participate in the RFS2 program. Accounting for this volume of renewable fuel would reduce the total volume of renewable fuel use required of others, and thus directionally would reduce the percentage standards. However, as we discussed in RFS1, the amount of renewable fuel that would qualify, i.e., that was used by exempt small refineries and small refiners but not used as part of the RFS program, is expected to be very small. In fact, these volumes would not significantly change the resulting percentage standards. Whatever renewable fuels small refineries and small refiners blend will be reflected as RINs available in the market; thus there is no need for a separate accounting of their renewable fuel use in the equations used to determine the standards. We proposed and are finalizing this value as zero.

The levels of the percentage standards would be reduced if Alaska or a U.S. territory chooses to participate in the RFS2 program, as gasoline and diesel produced in or imported into that state or territory would then be subject to the standard. Section 211(o) of the Clean Air Act requires that the renewable fuel be consumed in the contiguous 48 states, and any other state or territory that opts-in to the program (Hawaii has subsequently opted in). However, because renewable fuel produced in Alaska or a U.S. territory is unlikely to be transported to the contiguous 48 states or to Hawaii, including their renewable fuel volumes in the calculation of the standard would not serve the purpose intended by section 211(o) of the Clean Air Act of ensuring that the statutorily required renewable fuel volumes are consumed in the 48 contiguous states and any state or territory that opts-in. Therefore, renewable fuels used in Alaska or U.S. territories are not included in the renewable fuel volumes that are subtracted from the total gasoline and diesel volume estimates.

In summary, the total projected non-renewable gasoline and diesel volumes from which the annual standards are calculated are based on EIA projections of gasoline and diesel consumption in the contiguous 48 states and Hawaii, adjusted by constant percentages of 11.9% and 15.2% in 2010 to account for small refinery/refiner gasoline and diesel volumes, respectively, and with built-in correction factors to be used when and if Alaska or a territory opt-in to the program.

The following formulas are used to calculate the percentage standards:

$$\mathrm{Std}_{\mathrm{CB},i} = 100\% \times \frac{\mathrm{RFV}_{\mathrm{CB},i}}{(G_i - RG_i) + (GS_i - RGS_i) - GE_i + (D_i - RD_i) + (DS_i - RDS_i) - DE_i}$$

$$\mathrm{Std}_{\mathrm{BBD},i} = 100\% \times \frac{\mathrm{RFV}_{\mathrm{BBD},i} \times 1.5}{(G_i - RG_i) + (GS_i - RGS_i) - GE_i + (D_i - RD_i) + (DS_i - RDS_i) - DE_i}$$

$$\mathrm{Std}_{\mathrm{AB},i} = 100\% \times \frac{\mathrm{RFV}_{\mathrm{AB},i}}{(G_i - RG_i) + (GS_i - RGS_i) - GE_i + (D_i - RD_i) + (DS_i - RDS_i) - DE_i}$$

$$\mathrm{Std}_{\mathrm{RF},i} = 100\% \times \frac{\mathrm{RFV}_{\mathrm{RF},i}}{(G_i - RG_i) + (GS_i - RGS_i) - GE_i + (D_i - RD_i) + (DS_i - RDS_i) - DE_i}$$

Where

$\mathrm{Std}_{\mathrm{CB},i}$ = The cellulosic biofuel standard for year i, in percent

$\mathrm{Std}_{\mathrm{BBD},i}$ = The biomass-based diesel standard (ethanol-equivalent basis) for year i, in percent

$\mathrm{Std}_{\mathrm{AB},i}$ = The advanced biofuel standard for year i, in percent

$\mathrm{Std}_{\mathrm{RF},i}$ = The renewable fuel standard for year i, in percent

$\mathrm{RFV}_{\mathrm{CB},i}$ = Annual volume of cellulosic biofuel required by section 211(o)(2)(B) of the Clean Air Act for year i, in gallons

$\mathrm{RFV}_{\mathrm{BBD},i}$ = Annual volume of biomass-based diesel required by section 211(o)(2)(B) of the Clean Air Act for year i, in gallons

$\mathrm{RFV}_{\mathrm{AB},i}$ = Annual volume of advanced biofuel required by section 211(o)(2)(B) of the Clean Air Act for year i, in gallons

$\mathrm{RFV}_{\mathrm{RF},i}$ = Annual volume of renewable fuel required by section 211(o)(2)(B) of the Clean Air Act for year i, in gallons

G_i = Amount of gasoline projected to be used in the 48 contiguous states and Hawaii, in year i, in gallons*

D_i = Amount of diesel projected to be used in the 48 contiguous states and Hawaii, in year i, in gallons

RG_i = Amount of renewable fuel blended into gasoline that is projected to be consumed in the 48 contiguous states and Hawaii, in year i, in gallons

RD_i = Amount of renewable fuel blended into diesel that is projected to be consumed in the 48 contiguous states and Hawaii, in year i, in gallons

GS_i = Amount of gasoline projected to be used in Alaska or a U.S. territory in year i if the state or territory opts-in, in gallons*

RGS_i = Amount of renewable fuel blended into gasoline that is projected to be consumed in Alaska or a U.S. territory in year i if the state or territory opts-in, in gallons

DS_i = Amount of diesel projected to be used in Alaska or a U.S. territory in year i if the state or territory opts-in, in gallons *

RDS_i = Amount of renewable fuel blended into diesel that is projected to be consumed in Alaska or a U.S. territory in

year i if the state or territory opts-in, in gallons

GE_i = The amount of gasoline projected to be produced by exempt small refineries and small refiners in year i, in gallons, in any year they are exempt per §§ 80.1441 and 80.1442, respectively. Equivalent to $0.119*(G_i - RG_i)$.

DE_i = The amount of diesel projected to be produced by exempt small refineries and small refiners in year i, in gallons, in any year they are exempt per §§ 80.1441 and 80.1442, respectively. Equivalent to $0.152*(D_i - RD_i)$.

* Note that these terms for projected volumes of gasoline and diesel use include gasoline and diesel that has been blended with renewable fuel.

b. Standards for 2010

We are finalizing the standards for 2010 in today's action. As explained in Section I.A.2, while the rulemaking is not effective until July 1, 2010, the 2010 standards we are setting are annual standards with compliance demonstrations are due by February 28, 2011.

Under CAA section 211(o)(7)(D)(i), EPA is required to make a determination each year regarding whether the required volumes of cellulosic biofuel for the following year can be produced. For any calendar year for which the projected volume of cellulosic biofuel production is less than the minimum required volume, the projected volume becomes the basis for the cellulosic biofuel standard. In such a case, the statute also indicates that EPA may also lower the required volumes for advanced biofuel and total renewable fuel.

As discussed in Section IV.B., we are utilizing the EIA projection of 5.04 million gallons (6.5 million ethanol equivalent gallons) of cellulosic biofuel as the basis for setting the percentage standard for cellulosic biofuel for 2010. This is lower than the 100 million gallon standard set by EISA that we proposed upholding, but reflects the current state of the industry, as discussed in section V.B. We expect continued growth in the industry in 2011 and beyond. Since the advanced biofuel standard is met by just the biomass-based diesel volume required in 2010, and additional volumes of other advanced biofuels (*e.g.,* sugarcane ethanol) are available as well, no change to the advanced biofuel standard is necessary for 2010. Moreover, given the nested nature of the volume mandates, since no change in the advanced biofuel standard is necessary, the total renewable fuel standard need not be changed either.

TABLE II.E.1.b–1—STANDARDS FOR 2010

	Percent
Cellulosic biofuel	0.004
Biomass-based diesel	1.10
Advanced biofuel	0.61
Renewable fuel	8.25

2. Treatment of Biomass-Based Diesel in 2009 and 2010

As described in Section I.A.2, the four separate 2010 standards issued in today's rule will apply to all gasoline and diesel produced in 2010. However, EISA included volume mandates for biomass-based diesel, advanced biofuel, and total renewable fuel that applied in 2009. Since the RFS2 program was not effective in 2009 and thus the volume mandates for biomass-based diesel and advanced biofuel were not implemented in 2009, our NPRM proposed a mechanism to ensure that the 2009 biomass-based diesel volume mandate would eventually be met. In today's final rule we are finalizing the proposed approach.

a. Shift in 2009 Biomass-Based Diesel Compliance Demonstration to 2010

Under the RFS1 regulations that applied in 2009, we set the applicable standard for total renewable fuel in November 2008 [20] using the required volume of 11.1 billion gallons specified in the Clean Air Act (as amended by EISA), gasoline volume projections from EIA, and the formula provided in the regulations at § 80.1105(d). The existing RFS1 regulations did not provide a mechanism for requiring the use of 0.5 billion gallons of biomass-based diesel or the 0.6 billion gallons of advanced biofuel mandated by EISA for 2009.

In the NPRM we proposed that the compliance demonstration for the 2009 biomass-based diesel requirement of 0.5 bill gal be extended to 2010. This approach would combine the 0.5 bill gal requirement for 2009 and the 0.65 bill gal requirement for 2010 into a single requirement of 1.15 bill gal for which compliance demonstrations would be made by February 28, 2011. As described in the NPRM, we believe that the deficit carryover provision provides a conceptual mechanism for this approach, since it would have allowed obligated parties to defer compliance with any or all of the 2009 standards until 2010. We are finalizing this approach in today's action. We believe it will ensure that these two year's worth of biomass-based diesel will be used, while providing reasonable lead time for obligated parties. It avoids a transition that fails to have any requirements related to the 2009 biomass-based diesel volume, and instead requires the use of the 2009 volume but achieves this by extending the compliance period by one year. We believe this is a reasonable exercise of our authority under section 211(o)(2) to issue regulations that ensure that the volumes for 2009 are ultimately used, even though we were unable to issue final regulations prior to the 2009 compliance year. We announced our intentions to implement the 2009 and 2010 biomass-based diesel requirements in this manner in the November 2008 **Federal Register** notice cited previously. We reiterated these intentions in our NPRM. Thus, obligated parties will have had sufficient lead time to acquire a sufficient number of biomass-based diesel RINs by the end of 2010 to comply with the standard based on 1.15 bill gal.

Data available at the time of this writing suggests that approximately 450 million gallons of biodiesel was produced in 2009, thus requiring 700 million gallons to be produced in 2010 to satisfy the combined 2009 and 2010 volume mandates. Information from commenters and other contacts in the biodiesel industry indicate that feedstocks and production facilities will be available in 2010 to produce this volume.

Refiners generally commented that the proposed approach to 2009 and 2010 biomass-based diesel volumes was not appropriate and should not be implemented. They also recommended that the RFS2 program should be made effective on January 1, 2011 with no carryover of any previous-year obligations for biomass-based diesel or any other volume mandate. In contrast, the National Biodiesel Board and several individual biodiesel producers supported the proposed approach, but believed it was insufficient to compel obligated parties to purchase biodiesel in 2009, something they considered critical to the survival of the biodiesel industry. Many of these commenters requested that we conduct an interim rulemaking that would apply to 2009 to implement the EISA mandated volume of 0.5 billion gallons of biomass-based diesel. If the RFS2 program could not be implemented until 2011, they likewise requested that interim measures be taken for 2010 to ensure that the full 1.15 bill gal requirement would be implemented. However, putting in place this new volume requirement without also putting in place EISA's new definition for biomass-based diesel, renewable fuel, and renewable biomass

[20] *See* 73 FR 70643 (November 21, 2008).